TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1903.

PART I.

BOSTON:
PRINTED FOR THE SOCIETY.
1903.

☞ SEE LAST PAGE OF COVER.

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PART I.

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The following lectures have been circulated to some extent in the form of slips reprinted from the reports made by the Secretary of the Society in the "Boston Evening Transcript." As here presented, the lectures are, as far as possible, printed in full, and reports of the discussions following the lectures are added, these, where it appeared necessary, having been carefully revised by the speakers.

The Committee on Lectures and Publication take this opportunity to repeat what they have before stated, that the Society is not to be held responsible for the certainty of the statements, the correctness of the opinions, or the accuracy of the nomenclature, in the lectures and discussions now or heretofore published, all of which must rest on the credit or judgment of the respective writers or speakers, the Society undertaking only to present these papers and discussions, or the substance of them, correctly.

AARON LOW,
J. H. BOWDITCH,
E. W. WOOD,
Committee on Lectures and Publication.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, January 3, 1903.

A duly notified stated meeting of the Society was held to-day at eleven o'clock. President HADWEN presided and there were seventy members present.

The President announced, that in view of the large amount of business to be transacted, he would defer his annual address to another occasion.

The Executive Committee reported the recommendation of the following appropriations for the year 1903:

For Prizes and Gratuities,	
Committee on Plants	$1,500.00
" " Flowers	1,875.00
" " Native Plants	125.00
" " Fruits	1,275.00
" " Vegetables	900.00
" " Gardens and Greenhouses	375.00
Total	$6,050.00
For the Committee on School Gardens and Children's Herbariums, for Prizes $100 for incidental expenses 50	$150.00
For the Committee on Library, this sum to include the income of the French and Farlow Funds	525.00

For the Committee of Arrangements, this sum to include all extraordinary expenses . . .	225.00
For the Committee on Forestry and Roadside Improvement	110.00
For the Committee on Lectures and Publication, this sum to include the income of $50 from the John Lewis Russell Fund	200.00
For the salary of the Treasurer and Superintendent of the Building	1,200.00
For the salary of the Secretary and Librarian .	1,500.00

These appropriations were unanimously voted.

The Executive Committee also reported the appointment of Charles E. Richardson as Treasurer and Superintendent of the Building, and of William P. Rich as Secretary and Librarian for the year 1903.

Henry L. Clapp, Chairman of the Committee on School Gardens and Children's Herbariums, presented a summary of the annual report of that committee.

The report was accepted and referred to the Committee on Publication.

Walter S. Parker, Chairman, read the annual report of the Library Committee which was accepted and referred to the Committee on Publication.

The annual reports of the Chairmen of the Committees on Native Plants, Arrangements, Lectures and Publication, Forestry and Roadside Improvement, and of the Inspector to the State Board of Agriculture were offered and, without reading, were accepted and referred to the Committee on Publication.

Dr. Henry P. Walcott, Chairman of the committee appointed July 5, 1902, to revise and amend the Constitution and By-laws now governing the Society, presented to the meeting the report of that committee.

The report, which was in print, contained the Charter of the Society, the several amendments thereto, and a proposed new code of By-laws.

In his preliminary remarks, the Chairman of the committee stated, that by advice of eminent counsel, it had been decided that the Charter required the election by the Society at large of a Treasurer and a Secretary, instead of their appointment by the Executive Committee as heretofore practiced.

The proposed new By-laws were then read in full by the Secretary of the committee on revision, John K. M. L. Farquhar, as follows:

BY-LAWS

OF THE

MASSACHUSETTS HORTICULTURAL SOCIETY.

PRELIMINARY.

These By-laws shall, except as hereinafter provided, go into effect on the morning of the first day of January, 1904.

The officers of the Society provided for in Section I. of these By-laws, other than the Delegate to the State Board of Agriculture, whose terms shall begin on the first day of January, 1904, shall be elected at a meeting of the Society to be held on the second Saturday after the first Monday of November, 1903.

The present Delegate to the State Board of Agriculture elected at the meeting held on the first Saturday of October, 1902, to serve for three years, shall hold office until the first day of January, 1906, and his successor shall be elected at the annual meeting of the Society to be held in November, 1905. Appropriations for prizes and gratuities to be awarded in the year 1904 shall be made at said meeting to be held on the second Saturday after the first Monday in November, 1903, on the recommendation of the existing Executive Committee; but no other appropriations shall be then made calling for any disbursements after the first day of January, 1904.

The ballots for such election shall be printed by the Secretary, and the names of candidates nominated for each office shall be printed thereon in alphabetical order, and the voting shall be as provided in Section XV. of these By-laws.

Nominations for officers to be elected at said meeting to be held on the second Saturday after the first Monday in November, 1903, shall be made as provided in Clause 2 of Section XIV. of these By-laws, and in no other manner; and the Secretary shall, immediately on receiving them, post such nominations in some public place in the Society's building. The Secretary shall also send a notice of said meeting to every member of the Society, as provided in Section I. of these By-laws.

No officer of the Society, professor, or member of any board or of any committee, shall be elected or appointed until said meeting, for a period expiring later than the 31st of December, 1903; and the existing Constitution and By-laws are hereby amended or repealed, so far as may be necessary to make this section effectual.

SECTION I.

MEETINGS.

The annual meeting of the Society for the transaction of business and for the election of officers, — namely, a President, two Vice-Presidents, a Treasurer, a Secretary, 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.

In addition to the annual meeting there shall be held a meeting at noon on the first Saturday in January in each year to be called the inaugural meeting, at which the President shall make an inaugural address, and the Treasurer and Secretary, whose terms of office expired on January first preceding, the Board of Trustees, the Library Committee, the Committee on Lectures and Publications, and every existing committee appointed by the Board of Trustees under the provisions of clause (8) Section IX. of the By-laws shall each make a report to the Society for the preceding year. No business except the hearing of such address and the acceptance or rejection of such reports shall be transacted at the inaugural meeting.

Special meetings of the Society may be called by order of the President, or by any five of the Board of Trustees, or upon request of fifteen members of the Society.

A notice of each meeting and of every adjourned meeting shall be mailed by the Secretary to each member at his last address appearing on the records of the Secretary at least ten days prior to the meeting; and the notice of a special meeting shall specify the business to be considered at such meeting, which shall be proposed as provided in Section II., and no business other than that specified shall be transacted thereat, and no new business shall be transacted at any adjourned meeting.

Thirty members shall constitute a quorum at any meeting of the Society.

SECTION II.

POWERS RESERVED TO THE SOCIETY.

The Society may, except as herein provided, by vote of its members, at any annual meeting or special meeting called as provided by Section I., transact any business lawful under its Charter and By-laws; may instruct the Trustees and other officers of the Society; and the vote of the Society shall supersede the action of any of its officers; provided, however, that acquired rights of third parties shall not be thereby impaired. No vote calling for any appropriation of money or any sale or conveyance of any of the Society's property shall be valid without the approval of the Board of Trustees, except that the Society may, by a vote of a majority of all its members, authorize such sale or conveyance of the real estate belonging to the Society without the approval of the Board of Trustees.

The Trustees, or any five of them, or any fifteen members of the Society, may propose business to be considered at any special meeting, of which proposed business notice shall be given as provided in Section I. No sale of the Society's real estate, and no expenditure or contract therefor amounting to more than five thousand dollars for any one purpose, shall be valid and binding on the Society unless authorized by a vote of the Society.

SECTION III.

OFFICERS.

The officers of the Society shall consist of a President, two Vice-Presidents, a Treasurer, a Secretary, a Delegate to the State Board of Agriculture, a Board of Trustees of fifteen members, a Nominating Committee of five members, and such other officers and committees as the Board of Trustees shall appoint, according to Section IX.: provided, however, that no person shall be eligible to any office unless he shall have been a member of the Society for two years preceding.

SECTION IV.

THE PRESIDENT.

The President shall be elected annually by the Society, and shall be *ex officio* a member of the Board of Trustees. His duties shall be to preside at the meetings of the Society and of the Board of Trustees; to preserve order; to state the business before the meeting; to state and put questions; and, in the case of an equal division on any question, to give the casting vote; and to call for accounts and reports from all committees.

SECTION V.

THE VICE-PRESIDENTS.

There shall be two Vice-Presidents, who shall, except as provided in Section X., be elected by the Society on alternate years, and shall serve two years. In the absence of the President, the senior Vice-President present shall exercise all the authority, privileges, and powers of the President; and, in case neither the President nor either Vice-President shall be present at any meeting, the meeting shall choose a President *pro tempore*, who shall be invested with all the powers and authority of the President.

SECTION VI.

THE TREASURER.

The Treasurer shall be elected annually by the Society, and shall have the following powers and duties: —

(*a*) He shall have charge of the funds of the Society, and shall deposit the same in such bank or trust company as the Board of Trustees shall direct, where his account as Treasurer shall be kept; and all payments shall be made by check.

(*b*) He shall attend to the renting of the Building and the collection of the rents and other income of the Society.

(*c*) He shall pay prizes and gratuities upon the written order of the Board of Trustees or the chairman of any committee authorized by said Board to give such order, and shall pay no bills until audited by an officer designated by the Board of Trustees.

(*d*) He shall have the care and custody of the seal of the Society and of the dies for the medals; and he shall cause the medals to be struck and certificates of merit to be prepared, when required, and shall deliver them as awarded.

(*e*) He shall have in his safe keeping the bonds, deeds, notes, certificates of stock, and other evidences of property, unless the Board of Trustees shall otherwise direct.

(*f*) He shall, unless the Board of Trustees shall otherwise order, make all transfers and investments, with the consent and approval of the Board of Trustees.

(*g*) He shall pay the taxes, insurance, interest on loans, and other debts, and keep correct account of the receipts and disbursements of the Society.

(*h*) He shall, in January of each year, send to every annual member a bill of the amount due from him.

(*i*) He shall, as early in the year as possible, present to the Board of Trustees a full statement of receipts and expenditures for the preceding year. The fiscal year shall commence on the first day of January, and all

assessments for the ensuing year shall be due at that time. He shall annually make a report to the society at the inaugural meeting at the close of his term of office.

(*j*) He shall give bond for the faithful performance of his duties in such sum and with such sureties as shall be approved by the Board of Trustees.

(*k*) He shall not make or issue any note or other negotiable instrument unless expressly authorized in each case so to do by the Board of Trustees who shall in each case in their vote containing such authorization provide that such note or other obligation shall not be valid or binding on the Society until countersigned by some person designated in such vote: provided, however, that he may be given authority by a general vote of the Board of Trustees to draw checks on the funds of the Society on deposit, as provided in Clause (*a*) of this Section VI.

He shall, in the discharge of all his duties, be subject to the control of the Board of Trustees.

SECTION VII.

THE SECRETARY.

The Secretary shall be elected annually by the Society. He shall conduct the correspondence of the Society, and shall keep copies of the same in a book provided for the purpose which shall be open to the inspection of the members at any meeting. He shall receive and read all letters and papers addressed to the Society, and shall dispose of them as provided by the By-laws or directed by the Society or by the Board of Trustees. He shall regularly record the proceedings at every meeting and every adjourned meeting of the Society in a book to be kept for that purpose. He shall call special meetings of the Society when ordered or requested, as provided in Section I.

He shall give notice to each person of his election to office or membership in the Society. He shall record the election of every member, and report his name and residence to the Treasurer. He shall deliver to the Board of Trustees a copy of the proceedings of each meeting, whenever requested, and shall prepare and countersign all diplomas or certificates of membership.

He shall prepare for each annual election an alphabetical list of the members of the Society.

He shall, under the direction of the Committee on Lectures and Publications, act as editor of the publications of the Society, prepare them for the press, and superintend the printing thereof. He shall make notes, for publication, of meetings for discussion of horticultural subjects, and shall perform such other literary work as may be directed by the Society or the Board of Trustees, or as may not be otherwise provided for.

In the absence of the Secretary at any meeting the President shall appoint a Secretary *pro tempore*.

SECTION VIII.

DELEGATE TO THE STATE BOARD OF AGRICULTURE.

The term of office of the Delegate to the State Board of Agriculture shall be for three years, and he shall be chosen at the annual meeting whenever his term of office is about to expire.

SECTION IX.

BOARD OF TRUSTEES.

The Board of Trustees shall consist of fifteen members, including the President and the two Vice-Presidents, who shall be members of the Board *ex officiis*. Four members in addition to the President and one Vice-President shall be chosen each year, except as provided in Section X., and shall serve for the term of three years.

The Board of Trustees shall hold stated meetings on the first Saturdays of January, April, and October in each year. Special meetings of the Board may be called by the President or by a call signed by any two members of the Board on at least three days' notice, which may be given by mail at the last address of the member so notified appearing on the records of the Secretary. This notice may be waived in writing. Eight members of the Board shall constitute a quorum thereof.

In the absence of action by the Society as provided in Section II., the Board of Trustees shall have and exercise the following powers and duties: —

(1) They shall have general charge and direction of the business of the Society.

(2) They shall have the care and management of the Society's real estate, and may lease the same, or any part thereof, and make all necessary repairs; but no sale of the Society's real estate, except sales of shares in real estate trusts, so called, held by the Society as part of its invested funds, shall be valid without a vote of the Society authorizing such sale.

(3) They shall have the care and management of the Society's invested funds and other personal property, with power to invest, reinvest, and transfer the same in their discretion, or they may authorize and approve transfers and investments made by the Treasurer, as provided in Section VI. They shall have the care of all stocks, bonds, and other personal property of the Society, but may leave the custody of the same in the Treasurer, as provided in Section VI; and they shall annually audit, or cause to be audited, the Treasurer's accounts.

(4) They shall consider and pass upon all questions of the appropriation of money, and shall, at the annual meeting, recommend to the Society the amount to be appropriated for prizes and gratuities and such other appro-

priations as they may deem advisable during the ensuing year. They may, however, subject to the provisions of Section II., make such additional appropriations for the purposes of the Society as they deem proper.

(5) They shall appoint the following committees: a Finance Committee, a Library Committee, and a Committee on Lectures and Publications. The members of the Finance Committee shall all be members of the Board of Trustees. The members of the Library Committee and the Committee on Publications need not all be members of the Board of Trustees.

(*a*) *The Finance Committee.* — The Finance Committee shall, except as herein provided, have and enjoy all powers and duties given by this Section IX. to the Board of Trustees in relation to the care and management of the Society's property, real and personal, other than its Library.

(*b*) *The Library Committee.* — The Library Committee shall, except as herein provided, have all powers given by this Section IX. to the Board of Trustees in relation to the care and management of the Library of the Society.

(*c*) *The Committee on Lectures and Publications.* — The Committee on Lectures and Publications shall superintend all publications of the Society and have the direction in each year of six or more lectures and essays on horticultural subjects, including that provided for by the John Lewis Russell Fund.

In addition to these committees the Board of Trustees may appoint such other committees from among their number as they see fit, and may delegate to such committees any of their powers; but no expenditure or contract for expenditure exceeding five hundred dollars at any one time, and no appointment of committees or officers of the Society, and no election of members thereto, shall be valid or binding without the action of a majority of the full Board of Trustees at a legal meeting.

Any powers given to any committee by the provisions of this clause (5) and any powers delegated to any such committee by special vote of the Board of Trustees, may be withdrawn or limited by vote of said Board at any subsequent time. The Board may at any time remove any or all of the members of any such committee, and substitute others in their places.

(6) They shall appoint 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 either of them, and appoint others in their stead, whenever, in their opinion, the interests of the Society shall require it. They may employ such additional assistants as they deem best, and shall determine the compensation of all officers and agents of the Society.

(7) They shall arrange for six or more exhibitions of flowers, plants, fruits, and vegetables in each year, and shall have the entire charge of all arrangements for conducting the same.

(8) They shall appoint each year the following standing committees, the members of which need not be members of the Board of Trustees: (*a*) on

plants and flowers; (*b*) on fruits; (*c*) on vegetables. Each of these committees shall consist of three or more members. They shall also appoint each year a standing committee of five or more members on gardens. The President shall be one of this committee *ex officio*. In addition to the standing committees named in this Clause (8) the Board of Trustees may appoint such additional committees as may be required for conducting special exhibitions and for awarding prizes, and may, in their discretion, appoint persons from outside the membership of the Society to act as judges to award prizes either alone or in conjunction with any committee.

The Board of Trustees may delegate appropriate powers to any of the committees appointed under this Clause (8), excepting the power to appropriate money or to dispose of property of the Society. They may at any time revoke powers so delegated, and may at any time, in their discretion, remove any member of any such standing committee and substitute any other in his place.

SECTION X.

FIRST ELECTION OF VICE-PRESIDENTS AND BOARD OF TRUSTEES.

At the first meeting at which officers are to be elected, two Vice-Presidents shall be chosen, one to hold office until the qualification of his successor chosen at the annual meeting in November, 1904, and one to hold office until the qualification of his successor chosen at the annual meeting in November, 1905.

There shall also be chosen at said meeting twelve members of the Board of Trustees in addition to the President and two Vice-Presidents, so that the total number of said Board shall be fifteen. Four of said Trustees, other than the President and Vice-Presidents, shall be elected to and shall hold office until the qualification of their successors chosen at the annual meeting in November, 1906; four shall be elected to and shall hold office until the qualification of their successors chosen at the annual meeting held in November, 1905; and the remaining four shall be elected to and shall hold office until the qualification of their successors chosen at the annual meeting held in November, 1904.

SECTION XI.

THE LIBRARIAN.

The Librarian shall have charge of all books, drawings, engravings, herbariums, and other articles appertaining to the Library, and shall attend to the purchase, recording, cataloguing, arranging, binding, delivering, and receiving of books: these duties to be performed under the direction of the Board of Trustees or other committee thereof duly authorized or of the Library Committee. He shall as far as possible, assist those desiring to use the Library in their investigations.

SECTION XII.

THE SUPERINTENDENT OF THE BUILDING.

The Superintendent of the Building shall under the general direction of the Board of Trustees, or the Finance Committee, or other committee thereof duly authorized, or under the direction of the Treasurer, if the Board of Trustees shall so vote, have charge of the premises, and shall see that they are kept clean and in good repair, and that all Rules and Regulations in regard to their care are strictly enforced.

SECTION XIII.

VACANCIES.

Whenever a vacancy occurs in any office of the Society, such vacancy shall be filled by the Board of Trustees until the next annual meeting, when candidates shall be nominated as provided by these By-laws to fill the remaining term, if any, for which the vacancy exists.

SECTION XIV.

NOMINATING COMMITTEE.

(1) A Nominating Committee of five members shall be elected by the Society at its annual meeting. Said committee shall nominate at least twice the number of candidates required to fill each office of the Society. Said committee shall file such nominations with the Secretary at least one month before the annual meeting. The Secretary shall, immediately on receiving such nominations, post the same in some public place in the Society's Building.

(2) Nominations for any office, 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 Secretary shall, immediately on receiving such nominations, post the same in some public place in the Society's Building.

(3) The Secretary shall have the ballots printed under direction of the Nominating Committee. Each ballot shall state the number to be elected for each office and the names of candidates for each office shall be printed in alphabetical order. If any ballot is marked for more than the required number, the ballot shall be declared void as a vote for that office for which the excessive number is marked. Only such candidates shall be voted for as shall have been nominated as above provided in clauses (1) and (2) of this section.

SECTION XV.

VOTING.

All elections of the Society shall be by Australian ballot; and the polls shall be continuously open between the hours of twelve noon, and four in the afternoon on the day of the annual meeting.

The President or presiding officer shall appoint a committee of three to receive, assort, and count the votes given, and report the number. A plurality shall elect, and the President shall declare who are elected.

Voting by proxy shall not be allowed at any meeting.

SECTION XVI.

MEMBERSHIPS.

Any member may propose candidates for life or annual membership to the Board of Trustees. Such proposal shall be in writing and shall be accompanied by a statement of the qualifications of such candidate for membership. On any candidate being so proposed, said Board shall cause his name and the name of the member proposing him to be posted for at least one month in some public place in the Society's Building. During said month any member may file with the Secretary a written protest against the election of said candidate, and no candidate shall be eligible against whom thirty or more such protests have been so filed. At the first meeting of the Board of Trustees held after the expiration of the month during which the name of the candidate has been so posted, his name shall be voted on by such Board; and he shall be elected by a majority of the full number of such Board so voting. The candidate so elected shall qualify himself for membership within six months from the date when notice of his election is given him, or his election shall be void.

LIFE MEMBERS.

A payment of thirty dollars shall constitute a life membership, and exempt the member from all future assessments; and any annual member, having paid all dues, may become a life member by the payment of twenty dollars in addition thereto.

ANNUAL MEMBERSHIP.

Every annual member, before he receives his diploma or exercises the privileges of a member, shall pay the sum of ten dollars as an admission fee, and shall be subject afterwards to an annual assessment of two dollars.

PRIVILEGES.

Each member of the Society shall be entitled to the following privileges: —

1. To be present and vote at all the meetings of the Society.

2. To have personal access to the Library, and to consult any of the periodicals, books, or plates, or to examine any of the models belonging to the Society, under rules established by the Board of Trustees.

3. To have free admission to all the exhibitions of the Society, for himself and his immediate family.

4. To receive all the publications of the Society under rules established by the Board of Trustees.

SECTION XVII.

WITHDRAWAL OR DISCONTINUANCE OR EXPULSION OF MEMBERS.

Any member may cease to be a member by giving notice to that effect to the Secretary and paying the amount due from him to the Society. Any member who shall neglect for the space of two years to pay his annual assessment, after due notice from the Treasurer, shall cease to be a member. The Treasurer shall give notice of such withdrawal or discontinuance to the Secretary, who will erase such members' names from the list.

If any member shall dishonor the Society, or shall be guilty of any breach of good faith thereto, he may be expelled at any meeting of the Society, two-thirds of the members present voting therefor. But no member shall be expelled unless a written notice of the motion be served by the Secretary upon him personally, or left at his last or usual place of abode, at least twenty days before it is acted upon.

SECTION XVIII.

HONORARY AND CORRESPONDING MEMBERS.

The Society may, upon recommendation of the Board of Trustees, elect Honorary and Corresponding Members at any annual or special meeting, to each of whom the Secretary shall submit a Diploma or Certificate of Election, under the seal of the Society, signed by the President and countersigned by the Secretary; and such members shall not be entitled to hold office or to vote at any meeting.

SECTION XIX.

PRIZES AND GRATUITIES.

Prizes and gratuities may be awarded by the Board of Trustees, or by such committees or judges as may be appointed by them for such purpose,

to any person for the exhibition of any fruits, plants, flowers, or vegetables, either new of their kind or of uncommon excellence; or for any new and successful method of cultivating any variety of fruits, flowers, plants, trees, shrubs, or vegetables; or for any other object immediately connected with horticulture; or for the essential advancement of the objects of the Society in any other way. But no gratuity shall be awarded for any object which shall have been entered or exhibited for a prize. No award shall be made for any unworthy exhibit, and no gratuity given shall be of a larger amount than the lowest price established for the same exhibit.

SECTION XX.

AMENDMENTS.

Amendments to the By-laws may be proposed in writing by any member of the Society to the Board of Trustees at any meeting of the Board of Trustees held at least two months before the next annual meeting of the Society, and, on being approved by a majority of the Board, shall be filed with the Secretary in their original form or as amended at least thirty days before such annual meeting, and shall subsequently be submitted to such annual meeting; or any thirty members may propose amendments to be acted upon at any annual meeting of the Society, without the approval of the Board of Trustees, by filing the amendments in writing with the Secretary thirty days at least before such annual meeting. The vote on each amendment shall be "Yes" or "No."

The Secretary shall, at least three weeks before the meeting at which the same are to be considered, mail a copy of every proposed amendment to each member of the Society at his last address appearing on the records of the Secretary.

All amendments proposed shall be printed on one ballot, with a space for voting "Yes" or "No" opposite each amendment, thus:—

If you wish the amendment adopted, put a cross under "Yes." If not, under "No."	YES.	NO.
(Here the subject of the amendment.)		

Any amendment shall be adopted if it receives two-thirds of the votes cast. The polls shall remain open for the purpose of voting on any proposed amendments between the hours of noon and four in the afternoon, and the voting shall be by Australian ballot.

President Hadwen announced, that in accordance with the existing By-laws, a second reading was in order.

On motion of Dr. Walcott it was unanimously voted that the second reading of the proposed new By-laws be by title.

Mr. Farquhar then offered the second reading of the Proposed new By-laws as follows:

BY-LAWS

OF THE

MASSACHUSETTS HORTICULTURAL SOCIETY.

William C. Strong offered the following amendment, "Amend Section IX in clause (c) in the fourth line by substituting the word 'such' for the words 'six or more' and close the clause by the addition of the words "as may seem to the committee to be expedient."

Mr. Strong's amendment, which was read twice by Mr. Farquhar, was unanimously adopted.

Mr. Farquhar moved the following amendment, "that the word 'prize' be substituted for the word 'price' in the last line of Section XIX."

This amendment was read twice and unanimously adopted.

On motion of Benjamin P. Ware it was unanimously voted that the proposed new By-laws be accepted and entered upon the records of the Society and lie over for consideration at the next quarterly meeting in April.

The following named candidates having been recommended by the Executive Committee were, on ballot, elected to membership in the Society:

Daniel Smiley, of Mohonk Lake, N. Y.
Miss Harriet E. Freeman, of Boston.
H. L. Frost, of Arlington.
John L. Chapman, of Hingham.

At this point in the meeting President Hadwen retired, calling Vice-President Ware to the Chair.

On motion of William H. Spooner it was voted that when this meeting adjourns it be to Saturday, February 7.

A communication was read from James Sturgis Pray, Chairman of the Committee on Forestry and Roadside Improvement, reporting the resignation of Harvey N. Shepard of that committee and suggesting the appointment of James H. Bowditch.

It was voted that the resignation of Mr. Shepard be accepted and that Mr. Bowditch be elected to fill the vacancy.

The Vice-President announced that the Schedule of Exhibitions for 1903 and the Program of Lectures were ready for distribution.

Adjourned.

WILLIAM P. RICH,
Secretary.

BUSINESS MEETING.

SATURDAY, February 7, 1903.

An adjourned meeting of the Society was held to-day at eleven o clock. President HADWEN presided and there were twenty members present.

Thomas Harrison moved that the Committee on Lectures and Publication be paid for their services on the same basis as other Standing Committees. The motion was favorably discussed by Benjamin P. Ware, Michael Sullivan, John L. Bird, and Aaron Low.

William H. Spooner moved an amendment, that the Chairman of the Committee on Lectures and Publication be paid a certain sum, equal to that paid to the chairmen of the other committees, and the motion as amended was adopted.

Aaron Low, Chairman of the Committee appointed to prepare a memorial of the late Lamont G. Burnham, reported as follows: —

In Memory of Lamont G. Burnham.

Mr. President:

Again we are called upon to place upon our records the death of a member of our Society, adding another name to that ever increasing list of those who have passed from this to the higher life.

Lamont Giddings Burnham was born in Essex, Massachusetts, August 15, 1844, and died September 25, 1902. As a boy he attended the district schools and afterwards the Putnam High School at Newburyport. It was while attending the latter school, at the age of seventeen, that he enlisted in Company E, Forty-eighth Regiment, M. V. M., and served with credit until the term of his enlistment expired. Later he served in Company F, Third Regiment, M. V. M., until the close of the war. At the reorganization of the Massachusetts Volunteer Militia, he was appointed by General Isaac S. Burrill, Commander of the first Brigade, as Quarter-master; afterwards as Provost-Marshal, in which capacity he served five years. A year later he was elected Captain of Troop D, First Battalion of Cavalry, resigning after two years' service.

His business career commenced in 1865, when he entered the employ of Batchelder Brothers as a clerk. He remained with them until 1868 when he entered into partnership with Charles F. Newell, under the firm name of Newell & Burnham, succeeding to the coal business of William Wood & Company, No. 132 Charles Street. This partnership continued until 1871 when Mr. Newell retired. The firm then assumed the name of L. G. Burnham and Company, and in 1898 consolidated with five other firms, forming the Metropolitan Coal Company, Mr. Burnham being the first president. He retired from the coal business in 1899.

He then accepted the position of vice-president of the United Fruit Company, which office he held until he retired from business on account of ill health.

Mr. Burnham was very active in different social organizations, filling the office of president of the Boston Chamber of Commerce, Boston Associated Board of Trade, and the Boston Coal Club. He was also an active member of the Merchants' Association, and of the Commerce, Algonquin, and Country Clubs. He was appointed by Mayor Quincy a trustee of the City Hospital, which office he held at the time of his death. He was a member of Washington Lodge, Free and Accepted Masons of Roxbury, and an active worker in the Second Church. In politics he was a Republican.

Mr. Burnham was married in 1881 to Mrs. Mary E. Wood, of Lowell, Mass., who survives him. He resided on Bay State Road, and his summers were spent at his extensive farm in Essex, in the improvement of which he was much interested, setting out fruit trees and beautifying it with shrubs and flowers. The day before his death he drove twenty miles to procure ornamental shrubs to further beautify it.

From the very intimate relations with him during his army life the writer came to know him as a man of unblemished honor and of strict integrity. He was of a very pleasant personality, and as a soldier ever ready to do his whole duty though surrounded by perils and danger.

Resolved, that we deeply mourn the death of Mr. Burnham and extend to his family our heartfelt sympathy, and that this memorial be placed upon the records of our Society and that a copy be sent to his widow, and to his aged father.

AARON LOW,
BENJ. P. WARE,
H. G. JORDAN,
Committee.

On motion of Thomas J. Grey it was voted that the memorial be accepted and entered upon the records of the Society.

The President appointed the following members a Committee on School Gardens and Children's Herbariums for the current year:

HENRY L. CLAPP, *Chairman.*
W. E. C. RICH, *Secretary.*
MRS. H. L. T. WOLCOTT,
MISS KATHARINE W. HUSTON,
CHARLES W. JENKS,
HENRY S. ADAMS,
WM. P. RICH.

On motion of Mr. Spooner it was voted that when this meeting adjourns it be to the first Saturday in March.

The following named candidates, having been duly recommended by the Executive Committee were, on ballot, elected to membership in the Society:

CHARLES M. LIBBY, of Medford.
DAVID LUMSDEN, of Jamaica Plain.
ALEXANDER CARR, of Pride's.
H. H. ROGERS, of Fairhaven.
B. VAN HERFF, of New York City.
PROF. F. A. WAUGH, of Amherst.

William N. Craig referred to the recent death of two members of the Society, Mrs. F. L. Ames and Frederick L. Harris, and it was voted that committees be appointed to prepare suitable memorials.

The President appointed as a committee to present a memorial of Frederick L. Harris, William N. Craig, Thomas J. Grey, and Joseph H. Woodford.

The committee to prepare a memorial of Mrs. F. L. Ames he would announce at another time.

The meeting was then adjourned.

WILLIAM P. RICH,
Secretary.

BUSINESS MEETING.

SATURDAY, March 7, 1903.

An adjourned meeting of the Society was held to-day at eleven o'clock. President HADWEN presided and there were twenty-four members present.

The President appointed as a committee to prepare a memorial of the late Mrs. F. L. Ames, Dr. Henry P. Walcott, Gen'l. Francis H. Appleton, and William H. Spooner.

The Treasurer's Report for the year 1902 was read by Charles E. Richardson, Treasurer, and on motion of Mr. Spooner, it was voted that it be accepted and referred to the Committee on Publication.

The following named candidates, having been duly recommended by the Executive Committee were, on ballot, elected to membership in the Society:

HENRY J. THAYER, of Boston.
RUSSELL ROBB, of Concord.
HOWARD WILLIS PRESTON, of Providence, R. I.
JUDGE SAMUEL R. CUTLER, of Revere.
WALTER D. ROSS, of Worcester.
ABEL S. WOLFE, of Auburn.
J. LEWIS ELLSWORTH, of Worcester.

William N. Craig, Chairman of the committee to prepare a memorial of the late Frederick L. Harris, reported as follows:

In Memory of Frederick L. Harris.

Frederick L. Harris of Wellesley, Massachusetts, whose death occurred on January 11, at the advanced age of eighty-one years, was of English parentage and, after receiving a first class training at some of the best establishments in Great Britain, came to America at the age of twenty-eight.

He first settled at St. John, N. B., where he remained about three years, coming in 1853, to be head gardener to the late H. Hollis Hunnewell of Wellesley, surviving his employer by a few months only.

For the long period of forty-six years, Mr. Harris coöperated and worked indefatigably with Mr. Hunnewell in the establishment of the beautiful estate at Wellesley, which has no superior on this continent, and with which the name of our departed brother will long be identified.

As an all round practical gardener Mr. Harris stood in the front rank of his profession, and his skill as a cultivator was attested by the numerous medals, certificates, and other premiums, won before the Massachusetts Horticultural Society, during a long term of years.

He was for thirty-seven years a member of the Massachusetts Horticultural Society, joining in 1865, and the services he rendered to the Society during his life time, and to the cause of American horticulture generally can hardly be estimated.

He stood for everything that was elevating and noble in horticulture. His extreme modesty, his earnest sympathy for those struggling to rise in their calling, and his always warm-hearted welcome to visitors, endeared him to all who knew him, while the stimulus he gave to those who were favored to work under him, and with whom he was constantly thrown in contact, can hardly be estimated.

The weight of advancing years caused Mr. Harris to release his charge of the Wellesley estate about two and one half years ago and to seek a well earned rest. His death occurred after a somewhat lingering illness, borne with his usual exemplary patience, and the gathering of friends from far and near when he was taken to his last resting-place, attested to the universal esteem in which he was held.

Resolved, that in the death of Frederick L. Harris, the Massachusetts Horticultural Society and American horticulture have lost a stalwart friend, who ever labored diligently for the upbuilding of his profession.

Resolved, that this Society extends its sympathy to the family of the deceased, and that a copy of these resolutions be forwarded to his family, and spread upon the records of the Massachusetts Horticultural Society.

William N. Craig,
Thos. J. Grey,
Jos. H. Woodford,
Committee.

On motion of Mr. Spooner it was voted that the resolutions be adopted.

On motion of Kenneth Finlayson, it was voted that a committee of three be appointed to draw up resolutions in memory of the late Benjamin Grey of Malden. The President appointed as the committee, Kenneth Finlayson, Patrick Norton, and David F. Roy.

On motion of Mr. Spooner the meeting was dissolved.

WILLIAM P. RICH,
Secretary.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 10, 1903.

A meeting for Lecture and Discussion was held to-day at eleven o'clock. President HADWEN presided and the following lecture was delivered:

REMUNERATIVE OUTDOOR OCCUPATIONS FOR WOMEN.

BY MISS MARY E. CUTLER, WINTHROP GARDENS, HOLLISTON, MASS.

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

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

Agriculture is no exception to the rule.

The world has not heard so much about the woman farmer,

but she exists and flourishes, indeed, is increasing and multiplying upon the face of the earth.

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

Fifty years ago no occupations were open to them except cooking, sewing, teaching, and factory work. Few women were sufficiently educated to teach. Those who were, received from four to eight dollars a month and "boarded 'round," while men for the same service were given thirty dollars a month and board. In that day not even woman herself had so much as a dream of entering the professions of law, medicine, and theology.

When the genius of Harriet Hosmer impelled her to take up sculpture, she traveled from one end of the country to the other, begging for an opportunity to make the necessary study of anatomy.

When Elizabeth Blackwell determined to consecrate her life to medicine, not one of the standard medical colleges would admit her as a student, and society ostracized her.

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

A vast amount of the household drudgery that once monopolized the whole time and strength of the mothers and daughters, has been turned over to machinery; a money value is placed upon the labor of women.

Woman is no longer compelled to marry for support. In the world of literature and art women divide honors with men, and the civil service rules have secured for them thousands of remunerative positions under the Government.

What the woman of the twentieth century will be, I cannot say; one hundred years with the greater equality, the richer opportunities certain to come, will make her a being as much nobler, higher, and more gifted with every power for good, as the woman of today is superior in these qualities to her sister of a century ago.

Perhaps no department is better suited to woman's work than is that commonly known as glass farming, which is especially adapted to her for several reasons. First, it necessitates careful advance calculation, a matter in which women excel. Second, the physical labor involved is comparatively light, and so fitted to one whose strength is not robust. Third, in it there is room for much artistic taste and discrimination, certainly woman's specialties.

Glass farming, that is the use of plant houses, greenhouses, pits, frames, etc., is an ancient idea. We find mention of it in the Latin writers of the first century, Martial, Columella, and Pliny, and we have no reason to think that this was the beginning. But until recent years, glass farming has been regarded as a mere luxury, a pastime for the wealthy, rather than a practical method of supplying the world with necessaries. During the very years, however, in which women were entering the field of industry, this conception changed, and for the first time glass farming began to be regarded seriously as a department of agriculture.

Raising flowers in greenhouses for market is a profession for which women are proving themselves especially adapted. It is a business that has to be learned like any other; but, given a little experience, added to natural qualifications, such as perseverance, energy, and common sense, success is sure to follow. The plant I own and am running, was started on two hundred and fifty dollars, and I have built up a large, well paying business. With $250 and an acre of land, a practical woman in good health can earn a living for herself from the beginning and keep enlarging her plant all the time besides.

Given an acre of land, the first requisite is, of course, a greenhouse; a modest one can be built for one hundred dollars, and a rough heating apparatus put in for fifty dollars. The cost of plants and seeds is slight, as the large firms make easy terms to the trade, and the other expenses, such as tools, fertilizers, cold frames for starting plants etc., would amount to little on so small a scale. One great advantage is that the returns are so quick. With a greenhouse in running order by the first of September, crops of several kinds can be marketed before Christmas. The chrysanthemums come first, then follow violets, carnations, tulips, hyacinths, narcissus, calla and Easter lilies, spiræa, roses, etc.

The secret of success is to utilize every inch of space. In a vegetable house the tables can be filled with lettuce, cucumbers or tomatoes, while rhubarb and mushrooms can be grown in the ground underneath. A good head for planning is a necessity, as no time must be wasted between crops. It is necessary to know what kind of fertilizer suits each crop best. Some thrive best with bone meal, some with leaf mould or pasture turf. There are special fertilizers for special crops.

The location of such a venture as this is more than half its success. At first thought one would think that the neighborhood of a large city was the best place, but this is not necessarily so, as one is at the mercy of commission agents and middlemen. The best place is a small town or community of prosperous people, retired tradesmen, who do not travel, but make their homes there all the year. Flowers in a prosperous community you do not have to market; customers will come to you for them. I sell all my flowers at my greenhouses. Parties, receptions, and weddings are constantly taking place. The profit is in decorating and set pieces, rather than in cut flowers. A great advantage in this profession is that there is so much room in it for originality and taste.

A branch in which a great deal of money can be made is in the sale of plants; all kinds of bedding plants are wanted in May and June for lawns, parks, cemeteries, cottages at the seashore, vases, and wayside nooks. Pots filled with two or three California violet plants in bloom brought seventy-five cents in this city last month, and pansies are in demand in their season. Ferns, palms, and orchids grace your dining rooms, churches, etc.

The filling of window boxes and the designing of new effects in jardinières and hanging baskets is a line in which a woman can be very successful. The rose in all its colors is one of the most profitable flowers to grow under glass and the demand is great, for people must have them. The raising of roses is a much more difficult branch of the business and should be taken up only after a certain amount of experience. When this is gained considerable money may be made in it.

Did you ever stop and think where and how the beautiful flowers were grown? The flower business has great prizes to offer if one is of an investigating turn of mind. The large

amount of money that was received for the Mrs. Lawson carnation is inspiring to one thinking of going into the business. It is wonderfully interesting to create new flowers, to make those bloom double that have heretofore been single, and to paint the lily a new color; it is really scientific work. It is adapted to women, and so profitable has it generally proved, that it is strange so few have taken it up.

If a woman decides to take up flower and vegetable culture as a profession she ought, if it be possible, to fit herself for it by a previous course of study in some agricultural college; she should be familiar with botany and chemistry. If she has a chance to travel and study the flora of other countries she has the greater chance of making a name for herself. Miss Myra Dock, of Philadelphia, is an illustration. She was sent out by the park commissioners to study the park system in Europe. Trees should be studied as well as landscape gardening. Perhaps some day women may be park commissioners and parks today show the need of some new element in that department of civic life.

The demand and supply for carnation pinks never was so great as at the present time. Women are raising them all over the country with great success. I am engaged in growing pinks and grow them for profit as well as pleasure. Miss Evelyn B. Taylor, a florist of Milford, Mass., has two carnation houses, one 37 by 19 ft., another 87 by 26 ft. She gives all her time to the work, propagating and growing her own stock, and caring for the houses. She has found a market for everything in her own town, which is much more profitable than selling on commission. She has perfect health, enjoys her work, and supports her mother and father.

In these progressive times the handle of the agricultural tool is coming to know the grasp of the woman's hand, almost as well as the needle or the broom, and many women are making reputations as farmers of progress. Among the agriculturists are wives, widows, and maidens, women who have begun with small means, and women of wealth who have entered the ranks for the pleasure they could get out of it, or for philanthropic purposes. One and all are bright, intelligent women, and the large majority

are educated and cultured. Some are in partnership with men, others own and manage farms for themselves, while many manage farms for other people. Careful investigation shows that these women have distinguished themselves by their skill and executive ability.

In some important specialties, such as flower-seed growing, poultry raising, fancy dairying, and the growing of raisins and nuts, they have been successful pioneers. Their farms are scattered all through the country, on the uplands and in the lowlands, among the valleys, and even on the mountain sides. They are found in the largest numbers in Maine, New York, Pennsylvania, Ohio, Michigan, Minnesota, Wisconsin, Kansas, South Dakota, and California. Some are cultivating their thousands of acres, using the steam engine as a plowman. The majority conduct farms of more than 100 acres, while a few are contented with a single acre, depending on the spade and hoe.

Women lead in poultry culture in which they began a decade ago and it has been an uphill struggle against prejudices. Few, it is said, make a failure of it and the time, they claim, will soon come when women will control the industry here in America. It pays a greater interest on the investment than any other branch of farming.

The notable success of the few New England women farmers, proves conclusively that education and brains are needed in the business. Two young women in Compton, R. I., are examples of college graduates going directly into outdoor work. These women saw a chance to make money by supplying Newport's epicures with dainties. Their spring lamb, young geese, and hothouse grapes bring fancy prices, and there is n't an "ology" that they studied but contributes in some way to their success.

Now that Secretary Wilson is studying over New England's abandoned farms to see what they need to bring them back to fertility and prosperity, he might do worse than advise giving these deserted acres into the care of women.

A flourishing little farm of three acres on the north end of Lake Champlain produces yearly more than two and a half tons of honey and fifteen hundred ducks, besides quantities of fruit which is marketed at the neighboring summer hotels. It is

owned and run by Miss Frances E. Wheeler, for several years a stenographer and typewriter. It seems quite a change from a stenographer's place in New York to the ownership and superintendence of a duck and bee farm. Yet in looking backward, the sense of harmony deepens between the two occupations. I have grown to understand that it does not so much matter *what* we do, as *how* we do it; that the qualities required for a successful stenographer are equally necessary for a duck and bee rancher. In both callings, if success is to be attained, ignorance must be overcome by perseverance, tact, and common sense. After several years of office work, Miss Wheeler's hands became disabled, and the problem arose how to save the little family home at Chazy, N. Y., with its bee plant.

Many women have been successful in growing tomatoes in hothouses, starting them in the fall from seed. For the house-grown product the prices are high, and they continue to yield good profits to the grower until shipments begin to arrive from the South. There are but a very few varieties suited for forcing, among them are the Early Essex and Aristocrat.

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

years before prejudice gave way to appetite, and this now most popular vegetable came into general use. Even now many people remember it as an ornamental rather than useful plant. Probably more tomatoes are canned than any other fruit or vegetable, as they can be served in so many ways: eaten raw, with salt, pepper, and vinegar, or with a salad dressing, or plainly stewed in sauces, soups, preserves, and pickles. The tomato is ever ready for an emergency, and the provident housekeeper is sure to have it in reserve. One of the most successful tomato growers I know of is an English woman who grows them to perfection, and she always finds a ready sale for them at some of the leading hotels in this city. Under the tables can be seen beds of mushrooms, and she is as equally successful in growing that vegetable, giving all her time to this work.

It was a good idea conceived by this Massachusetts Horticultural Society, in offering prizes to the children for School Gardens and School Herbariums. The cultivation and observation of plants in school grounds and instruction upon them being of high educational value. Native wild plants, such as ferns, grasses, asters, goldenrod, violets, native shrubs, and economic plants, grains, vegetable roots, and leguminous plants, must be the stock of the gardens. The children are approaching the coming season with unbounded zeal and enthusiasm. This tends to cultivate a higher taste for the beautiful.

One essential to success in gardening is a love for it; but given this and intelligence to first plan carefully, and afterward carry out plans with perseverance, gardening will be found a successful, pleasant, and congenial occupation. Women are beginning to think about these things. Many of them could do much better at floriculture than to work for the very low wages paid for woman's work in the cities. It is not so much labor and muscle nowadays, as brains and machinery. Don't do your work first and your thinking afterwards, but think and plan first and then work.

It is said that the wives and sisters of the soldiers of the Twentieth Kansas Regiment, when the men were in the Philippines, went out into the deserted fields to work. The crops needed attention and there was no one else to give it, as nearly

all the members of the regiment were farmers, and there were hundreds of girls at work on the farms. It is hoped that women will not be driven into the fields by such circumstances, but that more of them will be led to realize that an existence spent in healthy, honest out-of-door work, is an existence which will enable soul and body to expand as well as the mind. Let me urge the women of this society and city to engage in more out-of-door work, and bask in heaven's sunlight; fewer headaches would be heard of and nervous prostration would be unknown. Have a flower or vegetable garden; take care of it all yourself and don't neglect it.

I have classified this subject into three parts, the first being — "Possibilities for certain women; what a few have done, and more could do."

I hope it is no egotism to state that in both the floral and vegetable departments of horticulture in which I have been engaged for the past seventeen years I have been entirely successful. You may wonder why I, a woman, should be engaged in this occupation; but I was brought up in the business of market gardening. My father followed it before me, and being led to it, both by circumstances and inclination, I naturally took it up. I must have had a strong love for the work or I should not have followed it as I have continuously until now.

I shall endeavor to show the business of gardening for women to be a profitable one. But let none deceive themselves by supposing that these profits are attainable without steady, personal application. My home of sixty-eight acres is located in Holliston, Mass., on the Boston & Albany railroad, twenty-five miles from Boston, thus being well located for gardening. The land slopes gently to the southeast and northwest, so that I can get two crops of early vegetables on the southeast slope, and peach orchards and later crops on the northwest. The branches in which I am most interested and engaged are flowers, vegetables, and fruits. Peach orchards occupy a large corner of my farm and have been a source of profit. When the trees are young, vegetables and small fruits can be grown between the rows, thus using all the available land. Apples, pears, plums, and small fruits I also grow for profit. A number of peach growers in my locality

have lifted mortgages from their farms by means of their peach crops. I am here today to extend to horticulture and floriculture the methods already employed in many other fields of industry.

Second — "Possibilities for all women; what many have done, and all can do."

It is not my aim or purpose to discourage or cause any of the thousands of women in this country who are engaged in other vocations to be dissatisfied with their lot, but it is to show those, who are endeavoring to solve the question of self support, that out-of-door occupations for women can be made profitable, provided they be carried on with steady personal application, without which there is success in nothing. As might be expected Vermont's best woman farmer turned her attention to dairying, and has reached very near the top notch in dairy fame. Mrs. Carrie J. Nelson, of Ryegate, Vermont, was left a widow with $1000 in money and as much more in a mortgaged farm. There were four children under eight years of age. In reviewing her work she says, "I did not have the courage at that time to put the $1000 into the farm and try and get a living from it, for fear that I might lose it, so I sold it to my brother-in-law, who lived in Boston, with the understanding that I should manage all his business here, and that he should board my family. At the end of five years I bought back the farm, thinking that if I could manage it for him, I certainly could for myself. I have always enjoyed my dairy work, striving to stand at the head, or as near to it as possible, in the quality of my butter."

Mrs. Nelson has taken the first prizes in the Vermont Dairymen's Association, Vermont Butter Makers' Association, Boston Food Fair, Vermont and New Hampshire Interstate Fairs, and the sweepstakes at the Vermont State Fair. She always hires the best help to be found, at whatever the cost, then she keeps the same help as long as possible.

Hundreds of women are earning pin money with poultry, early vegetables, fruits, jellies, pickles, etc. Those of you present who visited the Pan American Exhibition at Buffalo, N. Y., understand the meaning of my subject, "Remunerative Outdoor Occupations for Women." The march of improvement is onward and every day brings something new.

Third — "Possibilities for many Women; what some have done, and more can do."

In my neighborhood I know of a woman who gets a good living for herself and family by the cultivation of gladioli. She has a large garden of the choicest varieties and colors, sending them to Boston for sale in their season; and she also sells the bulbs. A woman living not far from this city has two long houses full of English violets, which, in the season, average her five dollars per day. She can support her family if her husband is not able to do so.

Where my gardens are today once was rocky land covered with bushes of all kinds; now a mowing machine can run over any part of it, and the result has been accomplished by nothing more than energy and perseverance. If I can get a good living and something more in sterile New England, and the soil of my farm is no better than that of thousands of others in Massachusetts, is it not an inducement and encouragement for those who live in the more fertile regions, from the Potomac to the Rio Grande, and from the Golden Gate to the Hudson, to engage in this same honorable occupation? We are living in a great age; history and our own experiences tell us, that in the last half of the century just passed we have witnessed some of the most wonderful inventions ever known. What great progress has been made in agriculture, in horticulture, in floriculture, in literature, in science, in art, and especially in medical science. What comforts and luxuries are enjoyed today by the humblest people that were unknown, even to the wealthy, a few decades ago.

I bring you words of encouragement for 1903; the springtime will soon be here when we must be up and doing. On the morning of a memorable battle Napoleon Bonaparte pointed his gleaming sword toward the morning sun, and said to the officers who stood about him, "Behold! behold! the sun of victory." May the same sun of victory shine on all connected with the Massachusetts Horticultural Society and all engaged in floriculture, horticulture, and agriculture, and may they be characterized, far and wide, for their harmony, contentment, and prosperity.

Discussion.

At the close of Miss Cutler's lecture an animated discussion followed, showing the great interest in the subject on the part of the large number of women present. Many questions were asked which were clearly and tersely answered by the lecturer. Mrs. E. M. Gill asked if the lecturer had experienced trouble with the dry rot in carnations, and if she had succeeded well in their cultivation. Miss Cutler replied that she had generally succeeded although there are always obstacles to overcome. Successive failures furnished experience which resulted at last in being able to know how to overcome them. The earth should be enriched every little while and worked over and liberally watered twice a week. The cold weather of the present winter had been a serious obstacle to overcome in greenhouse cultivation.

A lady asked if there was an opportunity for women who were not capitalists to learn the business, and if positions could be obtained at a reasonable salary in which to learn the business, and if one in starting out could make a living during the first year. The lecturer replied that she thought women interested in the work could find employment in seed stores, florists' establishments, and greenhouses, but it all depended, as in every department of industry, upon the tact and perseverance of the individual. Other questions and answers were as follows:

Do you repot plants in winter? Yes, when they need them.

In bringing your land to its present condition what fertilizers did you use? For general crops, Stockbridge fertilizers, for the greenhouse, pasture mould. Chimney soot should be used only around grape-vines.

How far apart should violets be placed? Nine by nine inches. Many women earn a living by the cultivation of violets.

Is there not some prejudice on the part of the public against women engaging in this business of the cultivation of plants and vegetables, and is not the work too heavy for women? I do not see how the public can help itself. Women have just as much right to engage in this business as men. A man can be hired to do the heavier and more laborious work.

What sources of information can you recommend to a person

about to start in the business? The best way is to learn by experience. No matter if you do make mistakes; keep right on and try again. Books sometimes mislead and are not always reliable.

What do you consider a good winter covering for an old-fashioned garden? Leaves, pine boughs, or any kind of coarse dressing. Roses need protection in winter by a straw covering.

Can anything be done in a region remote from a railroad? Railroad communication is not always a necessity. As was said in the lecture I consider a location near a prosperous town better than one near a large city. You are not then brought into competition with commission shippers of produce. Study your own market. It is a good thing to raise something to have all the year round, especially in winter.

Benjamin P. Ware was called upon and said that he was pleased to have the opportunity of listening to the interesting personal experiences of the lecturer. It was evidence and proof of what may be done by the women to improve their condition by entering into a healthful occupation.

Outdoor life conduces to health and strength and if more women engaged in it there would be fewer cases of nervous prostration and nervous headaches.

He hoped, however, that they would not go into the business in such numbers as to drive out the few remaining men engaged in it.

He called attention to Dr. Edward Everett Hale's three rules of life:

To be out of doors.

To come in contact with people.

To meet somebody every day wiser than ourselves and to learn something from them.

Regarding the last rule he thought it would be difficult for Dr. Hale to carry it out, the meeting with someone wiser than himself.

We have today, however, met with someone wiser than ourselves in the line of horticulture as the lecturer has shown us.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 17, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President HADWEN presided and the following lecture was delivered:

SOME OBSERVATIONS AND EXPERIENCES IN BERLIN BY A MASSACHUSETTS FARMER.

BY BENJAMIN P. WARE, MARBLEHEAD, MASS.

Berlin is one of the largest cities in Europe, containing nearly two millions of inhabitants, and is rapidly increasing in population. It is by far the most beautiful city that I saw in my journey through several countries and is renowned as the home of kings and emperors for many centuries. There are in the city some half-dozen royal palaces, besides many others less pretentious. Among the most important is the Royal Castle, begun by Elector Frederick II, in 1443, which has since been enlarged and embellished by succeeding kings and emperors, until the immense structure contains over seven hundred apartments. Only a portion of these is open to the public at fifty pf. or twelve cents as admittance fee. Visitors are shown in parties through the palace by an official who eloquently describes, in German of course, its costly and elegant contents.

The entrance from the inner court is by a wide ascending passage to the second story with brick pavement, apparently to enable horsemen to ride up to the official reception room. Here the visitors are provided with loose felt slippers, so that the polished oak floors may not be marred, and they are first conducted into a long corridor, one wall of which is hung with immense tapestries, representing battle scenes, and so exquisitely wrought and shaded that it was very difficult to decide whether they were oil paintings or not. A piece four inches square is a day's work for a man at Gobelin, the home of the art. Other rooms are hung with portraits of the family of Frederick the Great and of all of the Prussian monarchs down to Frederick

William IV. There are also portraits of many of the old electors and other distinguished men.

Such decorations are common in most of the palaces of Europe. The Hall of the Knights is especially richly upholstered in silk-velvet decorations. One side is hung with immense golden salvers and large dishes, lighted up from behind by electric lights that show them to the best advantage, while from the centre hangs an immense crystal chandelier of surpassing beauty which, when lighted, would be of indescribable grandeur. The throne room is equally rich in decoration, and its gallery was formerly of massive silver, that Frederick the Great had caused to be melted into coin to aid him in the conduct of his wars.

The new chapel in the upper story, built by Frederick William IV, is beautifully inlaid with variegated stones, and the columns and pulpit are of different marbles of most elegant designs. All royal weddings are celebrated here, while the old chapel is used for other purposes, being a large room, furnished with crimson-velvet chairs and the walls hung with oil paintings showing the history of Jesus from Annunciation to Crucifixion. Such decorations may be found in several cities of Germany. This meagre description leaves very much of the interest and beauty attached to this palace unmentioned for want of time, but it gives an idea of many other palaces in and about Berlin, and also of a half-dozen others of great historical interest at Potsdam.

At Charlottenburg, a part of Berlin, there is a palace of the seventeenth century containing rare furnishings, which was occupied by Napoleon I after the conquest of Berlin. One night he was frightened by the striking of a clock, supposing himself betrayed by the Prussians. The Mausoleum near by, in the beautiful park adjoining, is approached by a walk between two rows of spruce trees, giving a sombre effect appropriate to the tombs of Frederick William III and his beautiful Queen Louisa, beloved by all Germany. She was taken as a prisoner by Napoleon I to France, and died in 1810 from the effects of the trials and exposure attending her capture. For this act the German people never forgave France. Besides these are the remains of their son Emperor William I and of his wife Augusta. Very beautiful, reclining marble figures of the four are in the room

over the vault, which is lighted by blue-glass windows, producing an effect upon the visitor of subdued solemnity. The heart of Frederick William I, in a marble casket, is placed at the feet of his parents.

Berlin is a city of monuments and some of the long avenues are lined with the marble statues of distinguished men, in equestrian, sitting, or standing postures. In public squares and in principal streets are grand equestrian and other statues, in bronze, of emperors, theologians, reformers, and others, too numerous to particularize. The city is rapidly extending its borders with wide streets and new buildings, the latter nearly all built of coarse brick covered with stucco, giving the appearance of marble. The style of architecture, as well as of the construction of all new buildings is under the control of a government commissioner, hence there is much uniformity in the appearance of the dwelling houses. The system of taxation is largely the income tax, wisely and strictly enforced, without fear or favor, a worthy example that Massachusetts may well follow. "Unter den Linden" is a wide thoroughfare that probably presents more of interest to a traveler than any other portion of the city. The entrance is through the Brandenburg Gate, built in 1789. This structure, which is eighty-five feet high and two hundred and five feet wide, is surmounted by a group of bronze figures emblematic of victory, consisting of a chariot drawn by four horses. The chariot was taken to France by Napoleon I as a trophy of war, but returned in 1815. This is a magnificent structure and is a fitting entrance to a street on which are located four or more royal palaces, and the university buildings, accommodating five thousand students, and having a bronze statue of Humboldt in the foreground. There are also many elegant buildings for foreign embassies, for residences, and for stores containing the richest goods. The Royal Museum, the old and new, is free to the public and contains a wonderful collection of the arts of ancient and modern times, ancient sculptures, many works of the old masters, Raphael, Rubens, Rembrant, Van Dyke, and others, who are represented by a large number of their best works. There is another gallery for modern paintings exclusively. Relics from Herculaneum and also from

ancient Egypt are here found in vast numbers. The old saying that there is nothing new under the sun is here exemplified by steelyards, such as farmers used thirty years ago, for weighing, and safety pins, large and small, of gold, silver, and iron, that are some thousands of years old. This vast collection of curiosities compares favorably with national museums in other countries of Europe. There are eight or nine other museums in Berlin of special technical collections of great value to the student. In one of them is the carriage built for Napoleon's use at his second coronation, elegant but small in comparison with that built for the coronation of George III, in 1761, which weighs four tons and is still in use.

The Royal Arsenal located on this street is exceedingly interesting to the visitor. It is a square building, each side measuring two hundred and ninety-five feet in length with a quadrangle adjoining of one hundred and twenty-five feet. At the front entrance are several gigantic bronze statues of emperors noted for military valor, and plans of fortifications and battle grounds, in high relief. This immense building is filled with weapons of warfare from the eighth century up to the present time; from the bow and arrow to the Mauser rifle; from the old smooth bore cannon to the latest rifled fieldpiece. There are figures of soldiers dressed in the fighting costumes of different ages, and of mounted officers arrayed in full uniform, all very systematically arranged, with plenty of room for inspection. Cannons and other trophies captured in the last French war, some showing the deep indentations caused by the opposing shot, are displayed under a glass-roofed court adjoining.

The Berlin Aquarium is considered one of the best in the world. It is in the form of a labyrinthian walk through a subterranean passage among volcanic caves, with stalagmites and stalactites curiously constructed, with alcoves and niches containing glass tanks of clear water, lighted by electricity, in which are the oddest rare fishes and sea anemones in great and beautiful variety. In a large tank was a diver enclosed in the complete armor and with the apparatus used in sea diving; in all, making an exceedingly interesting study.

The Porcelain Factory is another interesting place to visit;

founded by private means and afterward purchased by Frederick the Great, it is still continued under royal control. The whole process of manufacture from the grinding of the raw material to the finished product is open for inspection four days in the week. In beauty of design and elegance of finish, the ware now produced compares favorably with that of any other country. To an American it seemed incongruous to see big burly men decorating the dishes with a camel's-hair brush, and to look out of the window and see women cleaning the streets, as is common in Berlin and other German cities.

Of all the beautiful monuments in Berlin, there is none more imposing and artistic than the statue of William I, which was unveiled on the anniversary of his one hundredth birthday, March 22, 1897. It was designed by Professor Begas and built at a cost of four million marks. The beautiful peristyle in the background is surmounted at each end by a quadriga driven by the goddess of liberty, carrying banners aloft, representing North and South Germany. The equestrian statue of the great emperor forms the central figure, which is sixty-five feet high resting upon a pedestal decorated with exquisitely worked figures, and all forming a masterpiece of the sculptor's art. This is only one of the many monuments erected all over Germany to the memory of one of her greatest and most beloved rulers.

Among the many monumental columns, commemorating important battles and victories, the most imposing is that of the Column of Victory erected in memory of victories over the Danes and French and unveiled in 1873. On the summit is a figure of the goddess of victory which is forty-two feet high and the column itself is one hundred and ninety-eight feet high. At the base, on each side of a large square enclosing a large reception room, are bas-reliefs of battle scenes in bronze, most exquisitely wrought. By climbing up two hundred and twenty-seven steps to the outlook a grand and extended view of the city is obtained. Near by are the House of Parliament, approached by the castle bridge which spans the river Spree, the Royal Castle, and the Bourse. There is a bird's eye view of that magnificent thoroughfare, Unter den Linden, before spoken of, and a full view of the great Tiergarten, beginning near by and extending along the river

Spree two miles to Charlottenberg. It is four miles wide and was formerly a game preserve, but laid out by King Frederick I as a public park. It is a natural forest with drives and walks, kept in perfect order, permeating it in all directions. Thus we see a public park of eight square miles right in the heart of the city and unsurpassed in beauty and extent by any other in Europe. There are several other parks within the city limits notable for the fine taste displayed in their management and for the healthful effect upon the people.

While palaces, public buildings, boulevards, monuments, museums, art galleries, and parks are of great interest to travelers in foreign countries, and sources of learning, yet the people themselves, their characteristics, their methods of life, their art of living, are of equal or more interest. The German people are eminently social in their habits; there are beer gardens everywhere. Places of resort and entertainment are very numerous and largely attended and, in the mild season, principally in the open air. While most Germans drink beer, and it is of excellent quality, they do not guzzle it, as many do in this country I am sorry to say, but sit in companies, and smoke and chat and sip, possibly spending a half-hour over a single glass. An American is surprised at finding so many people engaged in this way, both by day and by night. Many places are crowded nearly all night and we wonder when they sleep or earn their living. At the theatres each seat is provided with a small stand on which to rest a glass of beer and there are waiters in constant attendance to furnish it. Notwithstanding this I saw no drunkenness in all Europe. How different the result of the saloons in this country, the reports of the police court will tell. In Germany our common custom of treating is unknown. There, if a company of men drink together, each pays for his drink. Here a company of young men or old resort to a saloon, one treats all round and they pass on to another saloon, someone else stands treat, and here it is guzzling not sipping, hence, when they have each treated all round, they are in common parlance, "full."

The narrative of my experiences in Berlin may be of interest to those who are thinking of a journey abroad.

On my arrival there I was disappointed in failing to find

friends who had not yet returned from America, and who had a residence in Berlin. So I found myself unexpectedly in a strange city, knowing on one, and unable to understand or speak a word of its language. My first desire was to find a hotel in the neighborhood of my friends' residence. With my only baggage, a gripsack in hand, I started in search of a temporary home on a principal street. I enquired of a German, who kept a fruit stand, if he would kindly direct me to a hotel. I will say right here that I received the utmost kindness and polite attention from everyone I met during the whole of my journey abroad. This good-natured German not understanding a word I said, stopped everyone that passed and asked of them if they could speak English, but no one could. By pantomime I was made to understand that if I would cross the street and go up to the third story of the opposite building I might possibly find some one who could. I went as directed feeling very doubtful as to the result. After crossing the street I stood waiting and considering the possibility of success by climbing up to the third story, when an exceedingly beautiful young lady approached me and said, "Sir, I can speak a little English." I asked her if she would kindly direct me to a hotel; she said that she was going that way and would conduct me to one, insisting upon taking my hand bag which, of course, was refused. I learned while chatting with her on the way that she was from Poland and was in Berlin to secure an education. Soon she stopped in front of an imposing building, and said, "Here is the hotel." She lightly tripped up the steps, touched the bell button, returned, clasped my hand with a "God bless you," and was gone. She disappeared from my sight as suddenly as if she had been snatched up to heaven, where she seemed to me to belong. I have since cherished her memory as my angel of light. I found the hotel satisfactory, except that I could neither understand nor be understood, and after the first meal at the table, they sent outside for someone to take my order who could speak a little English.

The custom in Germany is to sleep in single beds, and the bed covering is a tick filled with down, which when on the bed looks like a partially filled balloon. My first night's experience was quite notable.

I looked upon the balloon with some misgivings, as the tick is just the width of the narrow bedstead, and only as long as to reach from the footboard nearly to the pillow. In getting under it I was careful not to disturb its equilibrium. After a while I wished to cover my shoulders a little more so I gave it my customary "yank" and my bare feet were uncovered to an alarming extent, which caused me to suddenly give the thing a push towards the foot of the bed, when I found the upper part of my body much more exposed. This made it necessary to get up and rearrange the whole business. After again getting carefully adjusted in bed and nearly asleep, as is my custom I made a sudden turnover, and flop it went on to the floor, and then I was under the necessity of another rearrangement. Moral, when you go to bed in Germany keep still and the downy bed-cover will settle about you like the atmosphere, giving the delightful sensation of being tucked in by your mother.

The goose is to Germany what the turkey is to New England. It is not only the principal dish on festival occasions, but great quantities are in daily use. In Berlin from fifteen to thirty carloads of geese arrive daily, each containing twelve hundred geese. These are largely imported from Russia under very careful inspection. If a single goose is found diseased the whole carload is quarantined at the expense of the shipper for a limited time. Such as are not fitted for market are kept and fattened until they are. Others are nailed through their feet to the floor, crammed with concentrated food, and in about two weeks they become very fat, with greatly enlarged livers, which, though diseased, command the high prices that epicures are willing to pay in order to gratify their abnormal appetites. There is expended annually in Berlin for geese the sum of $3,500,000, thus making the common use of downy bed covering possible.

In passing a fine store with large plate-glass windows, in which was a beautiful display of large fat geese, I noticed several two-bushel baskets, one filled with the heads of geese, another with the feet, one with huge gizzards, and still another with the second joints of wings. These excited my curiosity. I went in and was politely received by one of the salesmen. I told him that I came in not to buy, but to look about his beautiful store. Pointing to

the baskets of offal, I said, "Of course you don't sell those. What do you do with them?" He did not understand me any more than I understood him. This we do not always consider. He, supposing that I wanted to buy, began to fill a paper bag. From the first basket he took a goose head, looking up to see if I wanted more. I shook my head, protesting that I did not want to buy the stuff, so he went on putting one from each basket into the bag, then did it up into a nice package and offered it to me. With considerable vehemence I again declared that I did not want it. He, thinking I came from the country at some distance and wanted a strong package, went and put on an extra wrapping, and again the third, notwithstanding my protestations, and then he made out a bill for ninety pfennigs (22½ cts.) which I took to the cashier's desk and paid without further parlance, leaving the bundle behind and feeling quite satisfied with my experience.

There is no better way for a farmer to judge of the products of a country than by visiting the markets. Berlin has fourteen market halls maintained by the city. One of the most important is the Neue, both wholesale and retail. It is a very large two-story building divided into small stalls for the retail trade, mostly in charge of women, and devoted to every kind of produce. Here are flowers, fruit, vegetables, fish which are sold alive, game, and meats of all kinds. In every department may be found a great variety and of all qualities and the stalls are crowded, making it quite difficult to get about. They have here what I never saw anywhere else, a clearance sale. About noon, goods that are a little *passé* are placed in a sizable space with a long bench or counter in front. An auctioneer stands behind and offers the goods, from a single duck, or goose, to a box of game, to the crowd of buyers. The articles are passed rapidly along the counter for quick examination, being bid upon at the same time and sold.

A clerk takes the buyer's name and the price for settlement and delivery after the sale. Thus in an hour large quantities of goods are sold to the mutual advantage of both parties. The seller disposes of what might be lost in another day or two and the buyer gets for a low price what is yet good.

The river Spree is used as a canal for the cheap transportation

of produce from long distances in the country to Berlin. I noticed a canal boat about one hundred and fifty feet long and twenty feet wide, deeply loaded in bulk with pears and apples. They were in bins of different sizes, in the hold, apparently belonging to different producers, and put in charge of the captain, who seemed to act as their agent for the sale of the produce. The fruit was taken from the hold in large baskets holding about a barrel each, handled with very little care, and sold from the deck to hucksters and other dealers. Of course, this fruit although coming directly from the orchard would soon decay and never be in its best flavor. This description may be applied to other farm products. There are, however, some choice fruits to be found in fancy stores. The demand for near by products is largely supplied by hand wagons drawn by a woman and a dog, or a woman and two dogs, which seems to be a whole team. It is astonishing what large loads they draw.

Family bread making is unknown in Germany and I think in all Europe.

Milk is sold about the city from tanks on wheels. These tanks are divided into three parts from which cream, skimmed milk, and whole milk are drawn from faucets as called for.

Dwelling houses are warmed by the same style of heaters that have been in use in Germany for centuries, consisting of a piece of masonry, two feet square and six feet high, covered with tiles more or less ornamented. This encloses a fire box very inconveniently arranged for use. There is very little wood in Germany and it is cared for with the strictest economy. Coal is used and also peat, compressed with hydraulic pressure into brick forms. These are sold for $1.75 per thousand, seemingly a very low price, but labor is cheap in Germany. There are in the German empire 4,942,000 acres of peat bogs and in Ireland 12,000 square miles, covering two-fifths of the whole surface of the country, apparently an inexhaustible supply.

The German people have the reputation of paying little regard to the Sabbath. My experience of a Sunday in Berlin shows that this statement does not apply to all. I attended service at the Kaiser William Memorial Church, the newest and most beautiful church in Berlin. It was dedicated Sept. 2nd, 1895, and

was built at a cost of five million marks. The chime of bells was cast from cannons captured in recent wars. It was on a perfect September morning, the sky clear and calm, the temperature perfect, the trees in full foliage, flowers in profusion, and all nature seemed to join with the spirit of God's service that prevailed. I met a middle-aged German who kindly approached me and though not understanding each other verbally, spiritually and by pantomime I learned his thought. That there is one God in heaven whose sun shines upon the American, the Englishman, and the German alike, He is our Father, we are brothers, and offered his hand. The church doors were opened at ten o'clock and the service began at half-past ten. The seats are wide oaken benches with backs all numbered allowing twenty-four inches each. While this is a free church of the Lutheran denomination (the popular sect of Germany) there are some seats reserved with the owner's name on a brass plate in front. During the half hour before service there is some confusion by the rush of people selecting their seats, as no ushers are present. At the altar which stands in the middle of a round alcove is a large marble statue of Jesus, exquisitely wrought and surrounded by beautiful emblematic stained-glass windows, lighted by six candles with two other candles in front.

The effect of this is very imposing. The service began with an organ prelude, then singing by a highly trained quartette, with no accompaniment to drown the sweet tones of the singers. Then music by a choir and a hymn sung by the whole congregation of some two thousand people.

Such a chorus of sacred song seemed to lift us to the very gates of heaven. Other music by the quartette and choir followed. Thus, for three-quarters of an hour, the service seemed to run itself, as no minister had yet been seen. The minister then appeared and began with prayer from the floor, and the reading of a psalm, with responsive singing by the whole congregation. The Germans are a nation of trained musicians and singers. The minister then took his place in a high pulpit on one side of the church. After the usual notices he read the scripture lesson, the audience standing out of respect to the word of God. Then came the sermon of twenty-five minutes preached without notes

and with much force and apparent eloquence. He then descended to the altar, made a short prayer, followed by a hymn sung by the whole congregation; the numbers of the hymns to be sung being posted all about the church. All voluntarily joined in silent prayer as the closing service, the organ playing as the audience retired.

The communion service which immediately followed, was conducted in the usual manner, by a short address and singing by the choir. Then as many as could knelt upon cushions arranged around the altar and the minister passed in front putting a piece of bread into the mouth of each communicant, after which he put the chalice of wine to the lips of each. They then fell back and others took their places, until all were served, about fifty in number. This method is the same as practiced at the passion play at Ober-Ammergau which I had the pleasure of seeing the next Sunday.

The Zoölogical Garden of Berlin which I visited that Sunday afternoon is probably unsurpassed by that of any other country in natural environment, and the good condition and variety of animals on exhibition. It is a veritable garden. From the entrance is a broad graveled roadway, about thirty feet wide, extending well into the grounds. On each side are beds of choice flowers and on the right are ponds stocked with waterfowl of every description.

In the midst of a natural forest growth of trees are located handsome brick buildings for the lions, tigers, bears, and other animals, with spacious iron-barred red cages attached for open air exercise and exhibition. There is a large and artistically designed brick building for three giraffes with plenty of room, and there are suitable enclosures for nearly every known variety of animal and bird life, a poultry yard, a sheep fold, and a deer park containing specimens of the different species. An effort has been made to give to every animal conditions as natural as is possible under confinement.

This garden is a place of general resort, with a large restaurant where drinks of every description, from milk to champagne, and food, from Frankfort sausage to the rarest game can be obtained. It is provided with acres of tables, each with four seats, for the

accommodation and service of the visitors who come in crowds on evenings, holidays, and Sunday afternoons. There are two band stands near by where full bands play alternately, so that the choicest German music is continuous. On that Sunday afternoon, about two o'clock, people began to come in. The usual entrance fee is one mark, but on holidays and Sundays it is fifty pfennigs, or twelve cents which is half price. They came singly, in couples, and in whole families, including grandparents, parents, and children of all ages, nurses with babies in carriages, all dressed in their best, and all on their good behavior. All was quiet and peaceful, no boisterous talking, and nothing to disturb the peace of the day. Everything was in harmony with the beauties of heaven above, and of the earth surrounding them. The seats at the tables were rapidly filled, and many families brought their own refreshments, ordering a cup of tea, a glass of milk, or more as wanted, while others would have such elaborate and costly viands as their means and desires required. Many were walking about, and crowds gathered along the broad walk, to aid and to see the little children taking rides upon the elephant, the camel, and in carts and carriages drawn by zebras, llamas, donkeys, and goats. After being fairly loaded, the animals would be led by their keepers up the walk and back, when other children would take their places in great glee and happiness. Did those people break the Sabbath or keep it in a rational way?

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 24, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President HADWEN presided and the following lecture was delivered:

SYSTEMATIC POMOLOGY.

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

Amongst all the horticultural industries of this country pomology ranks first both in public interest and the amount of capital actually involved. It is necessary only to attend the meetings of the principal so-called horticultural societies throughout the United States and Canada to find that they are in most cases really pomological societies. Now this subject of pomology has received a somewhat one-sided development in this country due, of course, to the exigencies of circumstances. It is a one-sided development, however, which ought not to be accepted as final. We ought to do what we can to bring the subject into its proper balance.

The subject of pomology naturally divides into two parts. If we study the fruits themselves to ascertain their characters, their names, and their relationships, we are dealing with systematic pomology. If we study fruit growing, on the other hand, we are dealing with what we might call practical pomology, that is, with the practice of fruit growing. The term practical in this sense ought not to be construed as meaning that systematic pomology is any less *practical* than practical pomology.

We have already appealed to the testimony of the American horticultural societies. If we were to analyze their programs and follow their discussions we would be likely to find that the greatest interest of all during recent years, although manifestly pomological in nature, has not attached to either one of the branches already mentioned. The modern discussions have not concerned themselves with varieties, nor even with the methods of growing fruit, but have been most persistent and urgent on methods

of handling and selling fruit. These are the real problems which interest the average fruit grower of the present day. The whole color of pomological discussion has become commercial, and we have developed, therefore, another branch of pomology which does not primarily belong to the subject but which may be properly called commercial pomology.

I have already hinted my belief that commercial and practical pomology in this country have outgrown our knowledge of systematic pomology, and as I shall recur to this point again at the close of my address, I will dismiss it for the present with only another introductory word or two. Anyone who has had any experience with fruit exhibits or in dealing with the affairs of a horticultural society, or who has had occasion to use our modern horticultural literature to any extent, must have been frequently impressed with the remarkable scarcity of current descriptions of fruits, and with the utter inadequacy of those descriptions which he actually finds. Even in the experiment station bulletins, which are supposed to be constructed on broad, scientific principles, we find very few good descriptions indeed. In the horticultural society reports, which ought in particular to furnish a complete and systematic record of the introduction of varieties, we are treated no better. Descriptions of new varieties are very seldom given, and when they are attempted they are presented in the most vague and general terms and according to no formula at all. These are matters which could be easily corrected, and the fact that present conditions are no better in this respect is a strong argument in favor of the rejuvenation of the lost science of systematic pomology.

Systematic pomology, as I understand it, may be readily subdivided into three branches. These are (1) description, (2) nomenclature, and (3) classification. In order to study fruits we must first secure accurate descriptions of them, we must secondly decide upon correct and unequivocal names, and lastly we must classify these varieties in order to understand them best.

Descriptive Pomology.

Good judgment, born of natural ability and educated through experience, are necessary to produce the best results in the

descriptions of fruits. Not every greenhorn can give off-hand an accurate, reliable, and useful description. Judgment and experience, however, can be greatly aided by a suitable method for description; and a good method may even in some degree take their place. When I had my first lesson in this subject, I was provided by my teacher with a formula which I followed from point to point with the specimens in hand. This formula was of great assistance, even though, as I now believe, it was distinctly imperfect. The adoption of a comprehensive formula for description may be looked upon as the first step in systematic pomology.

It is requisite in the next place that the pomologist should supply himself with a suitable vocabulary of descriptive terms. We are not so poor in this respect as in others. We have very satisfactory nouns and adjectives with which to describe our standard fruits. Every man who has had much experience in this line, however, has found it necessary from time to time to coin some descriptive terms outright. As he works along from day to day he is apt to rely more and more on his own judgment to select and manufacture these descriptive adjectives, so that even having the best vocabulary as a beginning, the successful systematic pomologist is likely to make valuable improvements of his own.

Allow me to turn back now to the matter of the descriptive formula. It has been found best, as the result of considerable experience, to have this outline printed in the form of a description-blank. On this blank the various points to be described are entered in their proper order and vacant spaces are left into which the pomologist may enter his characterizations. Following are examples of a few of the blanks of this kind which we have in use at the department of horticulture, Massachusetts Agricultural College. Similar blanks have been brought into use in several of the other colleges and experiment stations in this country and in Canada. The Division of Pomology of the Department of Agriculture in Washington has also in use a much more elaborate blank, a sample of which I present also. So far as I know, there is not a horticultural society on the continent which has adopted any similar scheme.

APPLE

FRUIT: Form *size*

cavity *stem*

basin *calyx*

color

dots *bloom*

skin *flesh*

core *flavor*

quality *season*

TREE:

GENERAL NOTES:

Specimens received from *Described by* *Date*

Mass. Agric. College *Hatch Experiment Station* *Depart. of Horticulture*

Group *PEACH*

FRUIT: Form *size*

cavity *stem*

suture *apex*

color

dots *bloom*

skin *flesh*

stone *adhesion*

flavor *quality* *season*

TREE:

FOLIAGE: *glands*

GENERAL NOTES:

Specimens grown by *Described by* *Date*

Mass. Agric. College *Hatch Experiment Station* *Depart. of Horticulture*

Group *PLUM*

FRUIT: Form. *size*

cavity *stem*

suture *apex*

color

dots *bloom*

skin *flesh*

stone

flavor *quality* *season*

TREE:

FOLIAGE:

GENERAL NOTES:

Specimens grown by *Described by* *Date*

Mass. Agric. College *Hatch Experiment Station* *Depart. of Horticulture*

STRAWBERRY

FRUIT: Form

size calyx

core texture

external color

color of flesh seeds

flavor quality

season shipping quality

BLOSSOM: general character sex

PLANT: vigor runners

foliage rust

GENERAL NOTES:

Specimens received from Described by Date

Mass. Agric. College Hatch Experiment Station Depart. of Horticulture

United States Department of Agriculture.

DIVISION OF POMOLOGY.

POMOLOGICAL NOTES.

SECTION C. BRAMBLES. Date of Receipt,_____

Blackberries, Raspberries, etc. " " Description,_____

No. of receipt, _____ Journal page,_____ Volume,_____

Name and address of sender,_____

Species,_____ Name,_____ Purpose,_____

Condition at time of receipt,_____

Season,_____ classification,_____

Form; general,_____ vert. sect._____ cross sect._____

Size,_____ dimensions,_____

Arrangements of blossoms and fruit,_____

Stem; length,_____ character,_____

Receptacle; adhesion,_____ character,_____

Calyx; size,_____ number of sepals,_____

adherence,_____ color,_____

Surface, regularity,_____ gloss, etc. _____

Color,_____ permanence,_____

Drupes; arrangement,_____ character,_____

Comp. number,_____ size,_____ color,_____

Seeds: comparative size,_____ hardness,_____

Fungous or insect damage,_____

Flesh; color,_____ texture,_____

solidity,_____ firmness,_____

juiciness,_____ shipping quality,_____

Flavor,_____

Aroma,_____

Quality,_____

How illustrated,_____

Notes,_____

Sketch.

Plant.

Herb. arrange.,_____

How grown,_____

Vigor_____

Habit _____

Canes,_____

Flowers,_____

Date of bloom,_____

Leaf; { form,_____ leaflets,_____ / size,_____ color,_____ / margin, _____ petiole,_____

Productiveness,_____

Hardiness_____

Susceptibility to disease,_____

A few general comments on these descriptive forms may make their purpose and use more clear. It will be seen that the name of the varieties is commonly placed at the upper left hand corner where it will be most conveniently seen. In the upper right hand corner is the word apple, pear, gooseberry, or whatever it may be, designating the class of fruit described. This is almost a necessity in keeping up a large series of descriptions because the blanks must often be handled by inexpert persons who do not know whether Victor is the name of a pear, persimmon, or parsnip. In a set of blanks which I designed for use in the Vermont Experiment Station when I was a member of the staff there, I have put the apple descriptions on yellow paper, the plums on white, cherries on light blue, etc., with the expectation that this difference of color would make the assortment of descriptions easier. The result was rather gaudy and certainly striking, but I cannot say that it was a great success.

The most important suggestion to be made regarding the design of these description-blanks is that they should be of a definite and uniform size, preferably five by eight inches. I am aware that this size is rather meagre for the entry of a complete description, especially if there are many general notes to be included. It will usually answer the purpose, however, and in case the space proves to be too small it is a simple matter to continue the description upon a second sheet of paper. The large sheets are much more difficult to handle and I feel sure, after having experimented with many different sizes and styles, that five by eight inches is a very fair compromise of all the requirements.

I have tried two ways of filing these descriptions. In pursuance of the simpler method, I have had the blanks bound in book form when they first came from the printery. The book is convenient in size, it can be inserted in a reasonably large pocket, can be carried into the field, or can be taken with one to fruit shows, horticultural meetings, and other places where there are interesting varieties to be described. In this way one is able to pick up a large number of descriptions which he might not otherwise get. I am sure that every enthusiastic horticulturist has felt that he carried away less information from a good fruit show than he was entitled to, and he has doubtless thought within

himself that if he had had some good method of taking notes of the varieties which he saw exhibited he could have done better. This way of having description-blanks in book form and of desirable size for carrying in the pocket serves this purpose very well indeed. For the average fruit-grower who does not care to keep very many descriptions and who would not think of undertaking an elaborate filing system, the simplest and most convenient way to preserve these descriptions is to have them bound up in covers.

As soon as the work of descriptive pomology begins to assume anything like considerable proportions, it becomes necessary to adopt some other system. The one which naturally suggests itself and which is undoubtedly the best is the card-catalog system now applied to almost all lines of business. This is the system which is in use at the department of horticulture at the Massachusetts Agricultural College, and to the best of my information in all other colleges and stations where systematic pomology has been put upon a business footing. It is with this method of filing in view that I have particularly recommended the five by eight inch blank. All the manufacturers of card-catalog cabinets and apparatus keep in stock a standard cabinet having drawers of this capacity. The five by eight inch card is one of the standard cards and can be bought of these same supply houses. It may be had either blank or printed according to any desired form. For myself I am using a small four-drawer cabinet which I bought of the Globe-Wernicke Company here in Boston. Each drawer has the capacity of one thousand to two thousand cards depending upon the thickness of the sheets used, and the number of indexes required. The whole method of indexing and arranging these cards may be very readily worked out by each person for himself.

The larger and more elaborate blanks, already referred to as being in use in the Department of Pomology in the United States Department of Agriculture, are stored in Shannon files. Every business man knows what these are, and these also may be bought from the manufacturers who supply the various styles of filing devices to business houses.

Pomological Nomenclature.

It has often been remarked that one of the first necessities for the progress of a science is a stable nomenclature. In this respect it can not be said that pomology has thoroughly vindicated its right to be known as a science. Its system of nomenclature has not been all that could be desired. Even though the botanists and zoölogists often make themselves ridiculous in these matters they have at any rate a better system for doing it than we have in pomology. The only rules of pomological nomenclature which have received any official sanction from any horticultural body in America are the rules of the American Pomological Society adopted many years ago. These apparently were intended more as a guide for the labeling of the fruit displayed at the Society's exhibits than as a set of rules for controlling the practice of systematic pomology in the country at large. It will not be necessary to bring up these rules at the present time for analysis and criticism, but it may be said that the American Pomological Society has recently appointed a committee with a view to their revision.

In the meantime this whole subject of pomological nomenclature has come up for considerable discussion and suggestion in unofficial quarters. Two or three years ago there was quite an outbreak of discussion on this subject in the horticultural journals and important contributions were made to horticultural societies on this same topic. The most notable, because the most definite, results were secured by the Horticultural Club at Cornell University known more widely and familiarly as the Lazy Club. During the winter of 1898–'99 this question was widely discussed and an unofficial committee was appointed to draft a system of rules of nomenclature which might be suggested as covering the ground more fully. Professor L. H. Bailey and Professor John Craig acted on this committee so that there was really some talent represented. The present speaker had the honor of being one of the committee, and Professor S. A. Beach of Geneva, N. Y., was also present when the rules were discussed. Other men of horticultural reputation such as Professor S. W. Fletcher of West Virginia, Professor K. C. Davis of Wisconsin, and the late J. H.

Cowen of Colorado, also took active part in the formation of this set of rules. These rules were somewhat widely published and discussed outside the club in which they originated; and, although they have not received any official authorization from any state or national source, so far as I know, they are, I believe, the best expression of the fundamental principles of nomenclature which has yet been furnished in this country. Furthermore I think it not unfair to say that they represent more nearly the practice of the best systematic pomologists of this country than do the rules of the American Pomological Society.

Because this matter of nomenclature is of such great importance, and because a full and free discussion of it is especially desirable at this time, I shall present the Lazy Club rules for your consideration without further comment. I think it will not be necessary to explain the meaning of any of the rules or observations which follow them; and it will probably be entirely unnecessary to present the arguments for or against any of the particular propositions. It seems to me that since the thing now especially to be desired is the official recognition of some good rules of nomenclature, either those given herewith or something better, it would be especially becoming for the Massachusetts Horticultural Society to give this matter close attention. I most respectfully suggest, therefore, that the proper committee of this Society might do a real public service if it would give early and thorough study to this whole subject.

CODE FOR POMOLOGICAL NOMENCLATURE.

FORM OF NAMES.

1. The name of a variety of fruit shall consist of one word, or at most of two words.

In selecting names, simplicity, distinctiveness and convenience are of paramount importance. Pitmaston Green Gage and Louise Bonne de Jersey are neither simple nor convenient. Gold, Golden, Golden Drop, Golden Beauty, Golden Queen and Golden Prune, all given to different varieties of plums, are not distinctive.

The use of such general terms as seedling, hybrid, pippin, beurre, damson, etc., is not admissible.

Nouns must not be used in the possessive form. McIntosh's Red, Craw-

ford's Early, Bubach's No. 5, must be written McIntosh Red, Crawford Early, and Bubach.

Numbers are to be considered as temporary expedients to be used while the variety is under trial.

The name of no living horticulturist should be applied to a variety without his full consent; and the name of no deceased horticulturist should be used without the general agreement of living horticulturists.

An author publishing a new variety should use the name given by the originator, or by the introducer, or else should choose the oldest discoverable local name, providing such name may be conformed to these rules without loss of identity.

2. In the full and formal citation of a variety name, the name of the author who first published it shall also be given.

Names would then take such forms as the following: Summer Queen, *Coxe*; or Henry (Jerolaman); or Sophie (J. W. Kerr, Cat., 1894); or America, Burbank, *New Creations* 1898, p. 5.

It is expected that such citations of names will be used only in elaborate works on pomology, in scientific publications, or in cases where they are necessary for clear discrimination of synonyms.

PRIORITY.

3. No two varieties in the same group shall have the same name; and the name first published for a variety must always be used to designate it. All names subsequently published must stand as synonyms.

The term "group" as here used shall be held to designate the large general groups specified by words in common language, such as raspberry, plum, apricot.

PUBLICATION.

4. Publication consists in (*a*) the public distribution of printed name and description, the latter giving distinguishing characters of fruit, tree, etc., or (*b*) in the publication of a new name for a variety properly described elsewhere.

Such a publication may be made in any book, bulletin, report, trade catalogue, or periodical, providing the issue bears the date of its publication, and is generally distributed among nurserymen, fruit-growers and horticulturists.

REVISION.

5. No one is authorized to change a name for any reason except when it conflicts with these rules.

Classification of Varieties.

"Science is classified knowledge." This is the old definition and is undoubtedly a good one. If all our study of systematic pomology is to arrive to the dignity of a science, therefore, it must culminate in a reasonable classification. It is not sufficient for us to gather together a lot of miscellaneous information about varieties and to have our observations labeled with the correct names, but it is incumbent upon us to see that this information is scientifically arranged. Some system of classification is therefore the final and, perhaps, the most important step in our whole work.

We have been making some progress in the matter of pomological classification. Some of our varieties have been thrown into groups more or less homogeneous, convenient and satisfactory. Our knowledge of peaches for example has been greatly enriched by two recent publications of a systematic and classificatory nature. One of these is Professor Powell's monograph on the Chinese Cling group, and the other is Professor Hume's monograph on the Peen-to group. Each one of these writers has pointed out a number of varieties which are so closely related that they may be classified into a single group. There are other groups of peaches like those of the Honey type, the so-called native or Indian peach of Georgia, etc., which remain to be monographed; but at any rate the works of Professors Powell and Hume sufficiently exemplify the principle which we have in hand. Doubtless the plums have been treated to a more thorough ransack in respect to classification than any of our other fruits. We have no end of classificatory groups fairly well understood, such as the Domestica plums, the Japanese plums, the Wildgoose group, Chicasaw plums, Americana plums, etc., etc. It is rather odd that the work in classification should have progressed so much farther in this comparatively unimportant group than in other classes of fruits, such as apples, which are of more economic value and general interest. There is a reason for it, however, which may appear in the course of the discussion.

If one examines these classifications already cited and the others which have been devised for American fruits, he will find that

the most of them are practically botanical classifications and are not really placed upon a pomological basis at all. The distinctions are often drawn entirely from the consideration of species and have been worked out by the botanists for their own ends. This is particularly the case with the plums, which have originated from a large number of different botanical species.

If we take up some more homogeneous species, and one which is the legitimate property of the pomologist, such as the apples or pears, we shall find our present classification meagre and inadequate in the extreme. We very much need some system of classification for these fruits and the present dearth of our knowledge is evidently due, not to the fact that this need had not been felt, but to the large and imminent difficulties of the problem. The only general classification of apples ever attempted in this country has been that proposed by Dr. Warder in his famous book. Perhaps I ought to make some exception to this statement of the work of Thomas and one or two others, but the Warder classification is the only one which has gained any general notice. It is still used frequently for the want of anything better, but always with the feeling of its imperfections uppermost in the user's mind.

If we approach the subject of classification to see what its underlying principles are, we shall find that there are two systems, quite different from one another, but both applicable to any group of fruits. The Warder classification already mentioned may be taken as the type of the artificial method. According to this scheme, fruits are arranged in classes according to some one character at a time in which they accidentally agree. These characters are arbitrarily selected and the arrangement is, therefore, artificial even when most complete. The term artificial is especially justified by the fact that the varieties are not taken into groups according to their natural relationships.

Opposed to this method we have the natural system of classification which endeavors to place together those varieties which are most closely related by nature. It is assumed that those which have similar pedigree will for the most part show the largest correspondence in external characters, and though this assumption sometimes leads one astray it commonly conduces to

bring together those kinds which are really the most alike. The operation of the natural system of classification will be better understood if I cite one or two examples. Amongst apples we have the Ben Davis group of varieties including Gano, Black Ben Davis, Beach, and one or two others, all of them very much like the typical Ben Davis and several of them thought to be seedlings of that variety. These several varieties all agree in a large number of common qualities. They are naturally related. They are much alike. It is convenient to speak of them together.

We have also the Fameuse group of apples, containing a large number of varieties which are somewhat more plainly differentiated from other groups than those of the Ben Davis type already cited. In this group we have McIntosh, Princess Louise, Shiawassee Beauty, La Victoire, and several others.

If it were feasible to put all our apples into similarly marked and homogeneous groups according to their natural or apparent relationships, we might soon have a systematic and reasonable classification. There are many difficulties in the way, however, which seem to be almost insuperable. Undoubtedly much can still be done along this line and it is to be hoped that our American pomologists will give the subject the attention it deserves. But we may not deceive ourselves with the hope that the whole thing is to be cleared up immediately.

Before dismissing finally this comparison of the artificial and natural methods of classification, it may tend to make the subject clearer if we recall the fact that these two methods have both been extensively tested in botany. Those of you who are students of systematic botany will remember the enthusiastic and sometimes violent discussions which have gone on between the supporters of Linnaeus, Jussieu, and De Candolle, not to mention more modern names. The merits of these discussions have always centered on the comparison of the two methods of classification, the artificial vs. the natural. The student of systematic botany will remember further that botanical science in general has practically adopted a compromise of the two systems. The natural classifications like those of Engler and Prantl are followed very largely in the arrangement of books, herbaria, botanical gardens, etc., while in the construction of keys, indexes, and other short-

cuts for tracing up species the artificial method has been adopted. We see this nicely illustrated on a small scale in our Gray's Manual. To a certain extent the groups are arranged in a natural sequence; but at the beginning of each family or large genus we have an artificial key for tracing out unrecognized forms.

I mention these things not so much as matters of general interest, but because they point out very clearly the methods which we must adopt and which we must follow up probably for years before we shall have placed systematic pomology alongside of systematic botany where it belongs.

Conclusion.

I hope that the members of the Massachusetts Horticultural Society will not think me too officious if I make another somewhat personal plea to them. I am deeply interested in the progress of systematic pomology in this country. I have done what I could to have the subject taken up in a larger and more effective way by the colleges and experiment stations throughout the country. But it seems to me that the stronger and better endowed horticultural societies have a large and inviting opportunity to render aid. This Society holds some of the best and most notable fruit exhibits on the continent and has the opportunity, therefore, to secure many excellent descriptions of new and old varieties not only from this state but from other districts. I believe that the officers of this society, especially the secretary, are often called upon to identify varieties. This they could do much more expeditiously and satisfactorily if they had a suitable file of descriptions for reference. Moreover the specimens which are received from day to day in the course of this work might often be made the material for new descriptions and so the collection would go on increasing from year to year. A collection of variety descriptions like this in the hands of a pomologist is what a good reference herbarium is in the hands of a working botanist. I see no reason why the Massachusetts Horticultural Society should not become famous for its great collection of fruit descriptions just as the Gray Herbarium has become famous for its fine collection of types and local floras.

The general interest in pomology at the present time is so much attached to the practice of fruit growing that I feel compelled as a final word to assert the importance of systematic pomology to the business of the practical fruit-grower. If anything is evident from recent developments of fruit growing, it is that we require a more extended and intimate knowledge of the varieties which we handle. It is all very well to plant Ben Davis if a man likes that kind of fruit-growing. Ben Davis will succeed anywhere. It requires no intimate or expert knowledge of any kind. But if fruit-growing is put upon only a little higher plane and we begin to seek for varieties of higher quality which may be grown to perfection in different climates and under different circumstances, we shall find that much deeper study of the subject is required.

In order to get such knowledge as the present advance of practical horticulture makes necessary, we must proceed on some logical plan. We must in other words take up seriously the study of systematic pomology. A haphazard knowledge of varieties will no longer meet our needs.

Last of all I wish to remind you that all the great books on pomology ever written in America are really chiefly concerned with the systematic part of the subject. They are not, as we might suppose, treatises on how to grow fruit. The old books of Prince, Cole, and Kenrick, which ought to have been devoted to the practice of fruit-growing if any books ought to have concerned themselves with that subject, were for the most part descriptions of varieties. The great work done by Hovey, the Downings, Warder, Thomas, Manning, and the other great pomologists of America was done chiefly along systematic lines. The fact that these books have lived and have kept their influence to the present day ought to be some encouragement to us in going back to the subject of systematic pomology.

Discussion.

Benjamin P. Ware said that he would be glad to make some special inquiries of the lecturer. How much has been done towards this system of classification and how much progress has been already made in bringing it to practical use?

Professor Waugh replied that not much progress had been made, as the system of filing descriptions was begun only last August, but since that time five hundred forms had been filled out.

Mr. Ware continued, saying, that a system like the one proposed would be valuable to the Society, and a help toward the identification of fruits sent in. The problem is how can we get it and how can it be carried out? It is hard to identify fruits from Downing's book, which is not sufficiently clear, good authority as Mr. Downing undoubtedly was. Mr. Ware said that his point was how to get at the information and that he knew of no other way at present except to send our doubtful fruit to Amherst for identification.

E. W. Wood said that we can infer from the lecture this morning what our boys at the college are receiving. While we have this instruction for an hour they have it all the time.

In the matter of the nomenclature of fruits this Society has adopted as its authority the works of Downing and the reports of the American Pomological Society.

The importance of the matter of correct names of fruits we see very strongly at our exhibitions. Prizes are offered for certain named fruits and it is singular to see the names sometimes applied to the specimens. They come in under all manner of names and much of the fruit exhibited is wrongly designated. The question often arises, Shall we award the prizes for those exhibited under wrong names? Prizes are repeatedly awarded for wrongly named specimens. We should have accurate names for it is a satisfaction to know that the varieties exhibited are correctly named.

Sam'l H. Warren called attention to the proposed rule for omitting the use of numbers in the names of fruits. He said that this was his fiftieth year in the cultivation of strawberries and that he found the use of numbers very convenient in referring to certain new varieties.

To speak of the Bubach, strawberry would not designate a particular plant as Bubach had produced seedling plants, which had been put on the market, numbered as high as 128, and his Number 5 had been especially well known.

Professor Waugh stated that the variety of strawberry mentioned was now known simply as the Bubach, the number "5" being dropped, as the other varieties were not now in general cultivation.

We ought not to keep a long series of numbers. We should send out new plants under new names and drop the numbers, as Rogers has done in his grapes, substituting names for numbers.

Thomas Harrison referred to the fact that the same variety of fruit cultivated under the same name in different localities is subject to great variation in quality and appearance.

The lecturer stated that it was a practice in general exhibits to show apples under the name given to them in their original localities, but in the fruit market it is the custom to draw fine distinctions; for instance, it has long been a question whether the Newtown Pippin and the Albemarle Pippin were really the same apple. He had investigated the matter and had found that they were both the same but from different localities, one growing in Albemarle, Virginia, and the other in New York State.

Look at the market reports and you will see State Greenings and Vermont Greenings, identical kinds, but the latter quoted at from fifty cents to one dollar a barrel higher.

Mr. Harrison asked if the lecturer had known any variations in grafted fruit. Professor Waugh replied that he had noticed several such instances and that one should be compelled to exhibit under the name of the graft but should explain the circumstances.

William H. Spooner called attention to similar difficulties in rose growing. The Jacqueminot and American Beauty roses are quite different plants grown in the open from those grown under glass. You will have to allow for differences in cultivation.

President O. B. Hadwen thought that the lecturer had a great work before him, as he had seen many different kinds of Baldwin apples growing on the same tree, and each kind would have to have a different description.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 31, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. Vice-President BENJAMIN P. WARE presided and the following lecture was delivered:

WHAT THE UNITED STATES DEPARTMENT OF AGRICULTURE IS DOING FOR THE FARMER.

BY PROFESSOR C. S. WALKER, AMHERST, MASS.

The human mind creates its own concepts. 'T is strange such difference should be between *a* farmer and *the* farmer. A particular individual from a distant hill town is *a* farmer, but he is not *the* farmer. The farmer to which our subject refers is a concept which our minds create.

A few years ago the junior class of the Massachusetts Agricultural College had its picture taken, not in a group of individuals, but in a composite photograph. Each man's face was photographed on the same part of the single negative; the result of thus superimposing one picture upon another was a portrait of no single person, but a composite photograph made up of the features of all, blended together in one. What the artist did in this instance the human mind is continually doing. Its concept of *the* farmer is different from *a* farmer. *A* farmer is ignorant; *the* farmer is intelligent. *A* farmer is lazy; *the* farmer is industrious. *A* farmer is a bankrupt; *the* farmer is successful. The mind summons before it a long procession of individual farmers, fixes its attention upon different traits and characteristics of these men, rejects much and retains many distinctive elements, out of which it constructs for itself the farmer, the typical farmer, the ideal farmer. This concept is a reality of great practical use. It is folly to say that, because the ideal farmer cannot be seized by the hand and led out on the platform to be seen and questioned, he is a myth and a delusion. The ideal farmer, the typical farmer, *the* farmer is a mighty force, making for the advancement of agriculture and for the pecuniary and moral

prosperity of each individual farmer within the realm of its influence.

So we know what we are talking about when we speak of the Massachusetts farmer, the New England farmer, the southern farmer, the western farmer, the American farmer. The human mind has created out of its New England farmer, its southern farmer, its western farmer a still more comprehensive ideal, involving the excellencies of each, which it has named the American farmer.

The human mind has contemplated the British farmer, the German farmer, the Russian farmer, the French farmer. Among these the American farmer stands out preëminently the intelligent, the forceful, the successful farmer of the world.

How does it happen that the American farmer has come to the front at the beginning of the twentieth century? These competitors of his started in the race generations before he did.

Out of many answers to this question one is worthy of our consideration this morning. Because of what the United States Department of Agriculture has done and is still doing for the American farmer, it comes to pass that he holds first place today.

But, what is the United States Department of Agriculture? What presents itself before your mind when I utter the long-sounding phrase, the United States Department of Agriculture? Is it a big blue book filled with pictures, figures, and words? Is it a man with a butcher knife stamping out the foot and mouth disease? Is it a big brick building in the city of Washington? Is it Uncle Jerry Rusk, leaning back in his chair in an inner room in that big brick building? Is it the present Secretary Wilson asking for an appropriation of $5,509,540, for the benefit of the American farmer?

The United States Department of Agriculture is a phrase which stands for another concept of the human mind. It is an idea that is complex, but none the less real. It is more than buildings, more than a secretary, more than a group of men, more than an annual appropriation of millions of dollars. The department is an important part of the executive branch of the United States government. Its secretary is a member of the cabinet of the President. Men come and men go, old buildings give place to

new, one problem solved is followed by new perplexities, but the department is a vital organism which does not die. It is the best thought and determined purpose of the American people, efficiently applied to the solution of the problems of agriculture and to the promotion of its interests. While the department helps the farmer, the department is itself the product of the American farmer.

The Department of Agriculture under the direction of Hon. James Wilson, a member of the President's Cabinet, employs 3789 persons, devoting their time, talents, and strength to the promotion of agriculture. Of these, 2081 are scientists and assistants.

There are bureaus of animal industry, of plant industry, of forestry, of chemistry of soils, and the weather bureau. These are subdivided into many divisions. There are also independent divisions, offices, and sections, such as the section of foreign markets, the office of experiment stations, the division of statistics. For the support of these the government appropriated for the present year $4,503,960 in addition to $720,000 for the maintenance of the agricultural experiment stations and general printing expenses.

At the close of the eighteenth century the English landlords did much for the benefit of agriculture. Supported by the large sums received from the farmers for the rent of agricultural lands, they formed an aristocracy whose leisure time was given to devising ways and means for increasing the productivity of the soil. They succeeded so well that the production of wheat was doubled and the amount of general produce trebled.

In America the landlord system has never been established. The English farmer rents his land of the landlord, employs the agricultural laborer, while he himself furnishes, or borrows the capital, and is his own *entrepreneur*, or business manager. The American farmer on the contrary embodies all four functions in himself. He owns his land, being his own landlord, supplies his own capital, works as a manual laborer, and is his own superintendent. The average farmer, therefore, has little or no time to devote to discovering new methods in agriculture and no money to risk in experiment. His capital is too small to invest

in extensive improvement the profits of which cannot be at once realized. Again agriculture does not admit of coöperation, combination, and the forming of monopolistic corporations as do trade and manufactures. Hence the average farmer has been forced to sell in the cheapest market and to buy in the dearest market. He has not succeeded in securing for himself that share of the total product of wealth to which, it would seem, he is justly entitled. The remuneration of the banker, of the manufacturer, of the railroad man, of the merchant, of the professional man, of the miner, seems large in comparison with that of the tiller of the soil.

The modern captain of industry has at his command a corps of scientific experts to solve his problems for him and show him how to overcome difficulties. It is true that the individual farmer cannot keep a corps of scientists in his pay, subject at all times to his call. But what he cannot himself do, the government has already done for any and every farmer who has enterprise enough to avail himself of the work of the United States Department of Agriculture, carried on at an annual expense of over $5,000,000, for the solution of any and every problem the American farmer may propound.

The facilities of this great department are open to whomsoever chooses to avail himself of them. There is no obstacle the farmer has to confront which the department will not help him surmount. A corps of trained experts, equipped with the best instruments, is kept constantly at work for the benefit of the farmer in every department of agriculture.

Let us see now what the department is actually doing for the American farmer.

I. The department in the bureau of soils makes a study of the chemical and physical constitution of the soil. In the laboratory scientists investigate the relation of plant food to the growth of the crop and also what physical condition of the soil is best suited to the particular crop. Then surveying parties have been sent out into many states to examine the soil and make maps upon which are indicated the nature of the soil. This land is marked as suitable for fruit; that section as adapted to tobacco; this for figs; that for almonds. These surveys reveal the value of the

soil and its deficiencies, and what remedies should be applied, and what use may best be made of it. It shows how to reclaim alkali lands.

During the past year surveys of this sort have been made in twenty-six different states, of 14,541 square miles, at a cost of $26,551.

One of the most important parts of a farmer's business is that he should know the soil of his farm, what sort it is, what it is good for, and how it may be improved. It is very possible that a man may become poor on a most excellent soil, because he does not know its value nor how to utilize it. If he will make use of the hints and helps furnished him by the department, he may acquire an adequate knowledge of every part of his farm.

There was much discussion a few years ago of the abandoned farms of Massachusetts. What an excellent plan it would have been to have called upon the United States Department of Agriculture and have had it send one of its surveying parties to examine these lands, report upon them, and plot them upon maps. The surveyors would have told us which lands were suited for apples, where peaches could be grown; they would have discovered valuable tobacco lands; they would have indicated how the neglected areas might be best utilized.

In the Yazoo delta in Mississippi the surveyors discovered that the sandy loam is a typical early truck soil and that with the prevailing climatic conditions potatoes, or other truck crops, may be profitably raised. In Missouri it was found that the soils are remarkably uniform and that fruit interests may be extensively developed. In other states similar surveys have been completed. The surveys in Illinois have been so valuable that requests for more than 25,000 copies of the report have been made. No work of this sort has been done in Massachusetts since 1899, but next season it is proposed to spend three months surveying the Connecticut valley in the interests of the tobacco growers.

II. The department maintains a bureau of plant industry whose work is to assist the American farmer in his efforts to grow the best plants and protect them from destructive diseases.

Its first assistance is the procuring of good seed of profitable plants. Especial attention has been given to securing and

distributing forage crop seed, cotton seed, tobacco seed, and seed of other special crops. Agents have been sent to India, China, and Japan to get new seeds and plants for the purpose of introducing new industries to our country. Macaroni seed wheat has been successfully introduced from Italy. This has produced 2,000,000 bushels the past year. It yields from one-third to one-half more than our standard varieties and makes possible the growing of wheat much further westward over districts of great extent where wheat has hitherto failed to grow.

The introduction of new varieties of rice in Texas and other parts of the South has proved beneficial. The introduction of Japanese rice has resulted in the production of a crop worth a million of dollars and the investment of $20,000,000 in the industry.

The Jordan almond has been successfully introduced into California. The culture of tea in South Carolina is making good progress: 9000 pounds of marketable tea were produced last year.

This bureau of plant industry aims to be of especial assistance to the fruit grower. It is constantly studying problems connected with the production, cold storage, and marketing of fruit. It has conducted surveys to discover the best fruit growing areas in Virginia, Maryland, and Pennsylvania. What hastens and what retards the ripening of apples, peaches, pears, and other fruits kept in storage have been made the subjects of careful investigation.

It has also made an especial study of plant diseases. The cotton in the Sea islands of South Carolina began to die out. The planters appealed for help. A scientist was sent. He found that a fungous growth at the root was the cause. He was ordered to spend four years in that locality studying the problem until by selection and cross breeding he may produce a plant that is immune, or else find another remedy. The peach growers of Michigan complained of a new disease destroying their orchards. The department experts, taking a hint from the cotton disease, found a similar fungus at the root of the peach trees. To remedy this evil the department will import peach trees from Asia and from them develop a hardy stock that will be immune. To help the orange growers of Florida the department is engaged in developing a hardy orange tree that will endure the frost.

Another very useful office in the bureau of plant industry is that of farm management. The men employed collect the facts concerning the best paying farms in the country. They find out how these farms are managed, what are the conditions affecting them, such as proximity to markets, the nature of the climate, the land tenure, and methods of cultivation. They also take advantage of all the knowledge acquired by the several bureaus of the department and apply it to the necessities of the given case. Thus prepared they will make a working plan for a particular farm in a given locality. The farm that is thus managed becomes a model farm for that community. By such means it is hoped that the southern planter, the western farmer, and the New England agriculturist may be taught how to succeed in their occupation and keep abreast of the progress of the day.

III. The division of entomology has been of great assistance to the farmer in his fight to save his crops from whatsoever creepeth upon the face of the earth, and his live stock and poultry from parasites, and himself from disease and death engendered by the noisome mosquito and the pestilential fly. It goes even farther and endeavors to make insects the allies of the farmer in his endeavor to create wealth.

The fig fertilizing insect imported from Smyrna to California, has made it possible to produce tons of figs on the Pacific Coast. Japan and China have been explored and from these eastern countries the ladybird has been imported that it may help the farmer destroy that destructive pest, the San José scale. Dr. L. O. Howard, chief of the division, has spent the past summer in France and Italy studying the silk industry of those countries in order that he may teach the southern farmer how to cultivate mulberry plantations, breed silk worms, and reel the silk from the cocoons. From Austria and from Cyprus bees have been imported which have gathered a crop of honey double that collected by the best Italian bees. Moreover crosses have been made which have secured promising strains that make good honey and prove to be less irritable and more gentle in disposition.

It has been shown that the mosquito is the cause of much malaria in the human system and that flies may carry contagious

diseases from man to man and from beasts to humans. Methods of ridding ourselves of flies and mosquitoes have been discovered and the results published for those seeking information and advice.

The life histories of the Mexican cotton ball weevil, of the codling moth, of the bark beetle that destroyed 600,000,000 feet of pine timber in the Black Hills have been studied and remedies suggested. Work on insects injurious to shade trees, to truck crops, to stored products, such as flour, cigarettes, and tanned leather has been carefully conducted with good results.

Much has been accomplished in the testing of the various insecticides put upon the market. Many of these have been shown to be useless as well as expensive. It has been demonstrated that houses may be fumigated with hydrocyanic acid gas for eradicating household pests and for disinfecting apartments. But the gas must be used with caution and strictly according to directions.

IV. The biological survey has been carried on with the purpose of finding out the geographical distribution of mammals, birds, and plants as affected by climatic conditions. This survey discloses the curious fact that the biological zones in California often run north and south instead of east and west. In crossing the state from the coast to the interior one may traverse all kinds of climate from that of the desert of Sahara to that of the arctic region, with flora and fauna to correspond.

The destruction of coyotes and the larger hawks on the western plains has been followed by the multiplication of prairie dogs to such an extent as to cause great loss. How to get rid of these has been told in an article prepared by this division of the department.

The section of economic ornithology has shown which birds are the farmers' friends in helping him in his fight against destructive insects.

V. The bureau of animal industry is one of the most important in the department. To it is assigned the duty of investigating diseases affecting live stock and of discovery and applying remedies for the same. It inspects animals and animal products which are to be used for food and shipped from state to state

and to foreign lands. It is to promote the interests of the dairy and to advance the animal industries of the country. The bureau includes six separate divisions, each under the direction of a chief; also there are the experiment station and the editorial office. The editor prepares and publishes the volume annually which contains the report of the work of the various divisions of the bureau. The station is located at Bethesda, Md., on a small farm where is produced the serum for the cure of hog cholera and swine plague and conducts experiments with reference to Texas fever.

The work of the chief of this bureau, D. E. Salmon, in stamping out the foot and mouth disease in Massachusetts this past season, has made us familiar with the efficient and valuable service that is rendered to the American farmer when his flocks and herds are endangered by contagious disease.

The biochemic division employs a corps of scientists who are constantly preparing remedies for diseases and liquids for the production of flavor in butter and cheese.

The dairy division has for its chief, Henry E. Alvord, well known as a Massachusetts man, at one time professor of agriculture in our college. For a number of years he has been indefatigable in promoting the dairy interests. He has been of great assistance in establishing creameries, conducting dairy schools, enforcing laws for the protection of the dairyman, and extending the market at home and abroad for butter and cheese. During the past year experimental shipments of dairy products have been made to Japan, China, Cuba, and Porto Rico.

The inspection division prevents poor meat products from being sold in the markets and makes possible sales in foreign lands.

The zoölogical division studies the habits of parasites and the nature of diseases resulting from their attacks.

VI. The bureau of chemistry is one of the oldest bureaus of the department and its work is intimately connected with the work of all the other bureaus and divisions. It has a food laboratory, a sugar laboratory, a dairy laboratory, a road material laboratory, a dendro-chemical laboratory, and a laboratory for miscellaneous coöperation. The bureau has charge of all chemical work relating to agriculture. Its large corps of chemists is kept constantly at work.

The subjects of investigation include soils, fertilizers, and irrigation waters; agricultural products; insecticides and fungicides; the foods of men and of the lower animals; the raw material products, and processes of the agricultural chemical industries; the materials used in road construction; imported foods, and food products intended for export.

VII. The bureau of forestry is a recent addition to the department, created to meet the demand of the American farmer for help in preserving the forest so essential to profitable agriculture. The forest has been ruthlessly attacked by man and insects and fire. For the common good and for the preservation of our civilization the forests must be saved.

This bureau is composed of the divisions of forest management, of forest investigation, and of records. To meet expenses an appropriation of $185,440 was voted by Congress for last year. In the work one hundred and sixty-two men have been employed in forty-two states and territories. Advice is given to owners of forests who desire to have them managed in accordance with scientific methods. Plans have been prepared for the management of 372,463 acres. A plan is now in preparation for the management of a tract of 1,250,000 acres in southeastern Texas, the largest tract owned by a private party in the United States. The Secretary of the Interior depends upon this bureau for plans for the management of the forests owned by the United States.

Investigation of better methods of making turpentine has shown how the work may be done with less injury to the trees, than heretofore has seemed necessary.

A large collection of forest literature has been made and also a collection of six thousand photographs.

The bureau encourages the farmer to plant trees and renders valuable assistance in the work. There have been applications from two hundred persons for assistance in tree planting. Examinations of 200,000 acres have been made and two hundred and twenty-four plans for 6400 acres have been formed.

In New England the question of the possibility of planting cheap lands with white pine has been considered, and has led many owners of land to begin plantations of white pine.

This bureau has shown that the destruction of Appalachian

forests has caused a loss of $20,000,000 in twelve months, that mill privileges worth $20,000,000 are being destroyed; that soils are being washed away. To prevent these losses it is proposed that the government shall reserve large forest tracts on the mountains.

VIII. The weather bureau is now a part of the Department of Agriculture. Its forecasts of the weather have proved of great value to the farmer, warning him of frosts, of hail, of coming floods, of blizzards, of tornadoes, of all of those changes which affect favorably or unfavorably the work of the agriculturist. This bureau keeps a record of the condition of the growing crops in all parts of the country and reports weekly. Its data enable the farmer to form a reliable opinion as to the climatic conditions of any region which will make it possible or impossible to successfully produce a special crop in that locality.

IX. One of the most useful divisions of the department is that of statistics. John Hyde, the chief, has under his immediate direction one hundred and thirty experts and 250,000 correspondents. The correspondents write him from all parts of our country and from many parts of foreign lands. He keeps informed of all the essential facts relating to the condition of the various crops at home and abroad and as to the growth and products of live stock. Rates of transportation on cars and vessels are published. The range of prices is found out and reported. The services of this division are made use of to a great extent by middlemen and speculators, often to the detriment of a farmer who does not know that there is such a publication as the "Crop Reporter" packed with valuable information and printed every month for his especial benefit.

X. The office of public road inquiries has been doing a wonderful work lately for the farmer. It shows the cost of bad roads and the value of good roads; demonstrates the profit to owners of city property of money expended by them on country roads; organizes all classes of the people in a crusade for good country roads; tells what has really been accomplished in building good roads in different parts of the country and shows how other parts of the country may get the same advantages; discovers excellent road material in the immediate vicinity of the

poor highway; oyster shells in the South, trap rock in New England, gravel elsewhere; discusses new plans for road improvement and encourages experiments in the right direction.

Under its direction road conventions have been held in the southern states. Special trains loaded with all the best machinery for the construction of good roads and carrying a corps of skilled workmen and scientific experts and lecturers and business men have been sent from place to place giving object lessons in the construction of good roads. By such means the people of Virginia, Georgia, Alabama, Tennessee, have been astonished and delighted, and made converts to the determined movement for good roads and cheap transportation of passengers and products from the farm house to the market.

XI. The section of foreign markets, under its chief, Frank H. Hitchcock, has been for years working in season and out of season to extend the market for the products of American farms among all the nations of the world and to retain the markets already gained in spite of persistent attempts to drive American products out by means of a high tariff, or that feeling, by the pretext that the products are diseased and unwholesome and must therefore not be admitted beyond quarantine. In this work this section has been ably assisted by all the other divisions and bureaus of the Department. All have coöperated to this end so efficiently that during the past year the export of agricultural products amounted to $860,000,000.

XII. The office of experiment stations, under the direction of A. C. True, has in charge those matters which relate to the coöperation of the department with the many experiment stations in the several states, supported by federal grants, and with the land grant agricultural college. This office is the headquarters of these institutions which with their splendid equipment, liberal endowments, and trained corps of scientists and learned faculties are doing so much in the line of original investigation and in the way of the agricultural education of young and old. About forty years ago Senator Morrill of Vermont committed the national government to this wise policy of agricultural education and investigation. The results so far have abundantly justified his action and have won for him great honor. But at the close of one hundred years what magnificent results may we not expect.

The United States Department of Agriculture is not to be separated from these institutions. It includes them all. They and it are one. Each depends upon and supplements the other. The colleges furnish the department with scientists. The department is a post graduate school for the Bachelors of Science, and a field for the life work of the Doctors of Philosophy.

To this office of experiment stations has been assigned the investigations and work relating to irrigation and agricultural engineering. A great work is this indeed. It comprises no less a task than the transformation of the Great American Desert into a paradise, populous with a happy people. Men have been sent to Egypt to study the irrigation system of the delta of the Nile and the laws that secure the rights to water. Engineering problems relating to the storage, the transfer, the utilization of water for the production of crops have been studied, and, in a measure, solved. Shall the canals be cemented to prevent waste? How shall the destruction of farms by the absorption by water of alkaline deposits be prevented? Irrigation is called for in the South as well as in the West.

Irrigation has given rise to a demand for engineers to instruct the farmer how best to apply forces of nature to his service. How shall he utilize his windmill? How may he work with electricity? How can he get the most out of his water power? What machinery can be profitably used? These questions are constantly asked the department, so that it is driven to ask the government for a new division of agricultural engineering, with engineers who shall go to the farmer and show him how to harness the forces of nature and make them toil in the field for the production of wealth.

XIII. Lastly there is the division of publications. Its work is to publish the results of the labors of the department in all its various bureaus, divisions, sections, and offices. To do this work necessitates the employment of a large force of editors, proof-readers, compositors, artists, engravers, photographers, equal to that of our largest publishing houses. One item of printing last year was 3,345,000 copies of farmers' bulletins which give in popular form the most practical results of scientific farming. The Year Book of the Department of Agriculture, containing 846

octavo pages, profusely and beautifully illustrated and packed with valuable information, expressed in a clear and interesting style, could not be published by Harpers' for less than ten dollars. Yet it may be had for the asking by any farmer who appreciates its worth. But this is only one of its many volumes. Its list of publications would fill a volume and the books themselves make a library.

All this and more has the United States Department of Agriculture done for the farmer. This the department continues to do. In the future, as the years come and go, it will do more and still more for agriculture and the agriculturist. The territory of these United States, stretching from Behring Straits to Florida Keys and from Maine to Southern California, to say nothing of Porto Rico, of the Hawaiian and the Philippine Islands, constitutes a good sized farm. It belongs to the American farmer. It is capable of producing good crops, enough to feed and clothe and supply the growing needs of humanity. Our eighty millions shall become hundreds of millions. To provide for these is the work of the American farmer. It is no small task, but he is capable. The German farmer is a peasant. The British farmer is bankrupt. The farmers of all other lands are little better than serfs. It is the destiny of America to produce a farmer who shall hear the voice of God commanding him, "Replenish the earth, and subdue it."

The New England farmer found Massachusetts a wilderness, the home of savages, bleak and barren. He replenished it, he subdued it, and now it is the Old Bay State.

His sons crossed the Hudson, climbed the Alleghanies, spread out over the prairies, passed beyond the Mississippi, scaled the Rockies and the Sierras, and bathed in the Pacific Ocean. Behind him in his footprints grass grew, grain bowed its fruitful head, orchards and vineyards sprang up, flocks and herds multiplied, and homes were founded.

By replenishing the earth man best subdues it. He who subdues the earth conquers himself. The victor over self is a hero. He can do anything. Nature is on his side, his obedient servant.

The American farmer has wrought well. One of his best creations is the United States Department of Agriculture. He made the department: not the department, him.

But now the department, which he has formed, reacts upon himself as an instrument and means for his further development and higher education.

But how shall a farmer, the average farmer as distinguished from the farmer, make the most of the facilities freely offered him by the department of agriculture? He can at least do this: he can respect his calling and make up his mind that he will subdue his own farm by replenishing it. In this work of replenishing his own farm and subduing it, he may go into partnership with the department.

The department will help him classify the different types of soils; will show him what fertilizers are needed; will make plain what crops and fruits and animals may be raised to the best advantage; will help him understand climatic conditions and solve problems of irrigation and agricultural engineering; will make a plan for the improvement and management of his bit of forest; will help him fight insect destroyers and overcome the diseases that attack his plants and his live stock; will tell him where his best markets are to be found and assist him in building good roads and in securing cheap and quick transportation to and from his markets; will analyze his commercial feed stuffs and fertilizers and drinking water for him and prepare for him cultures for his butter and cheese and serum for his cattle; will provide new seeds and cuttings of foreign plants; will keep him informed of all the latest discoveries of science in its application to agriculture; will furnish him gratis with the latest and best publications concerning agriculture; and will put at his service a trained army of scientists capable of finding out all that needs to be known. Thus aided there is no reason why the owner of a farm may not in the course of time transform it into a home that shall not only furnish him and his family a livelihood, but shall become a delightful place to all beholding it. There is no reason why such a farm should not become an environment reacting upon the individual making him a country gentleman of culture and of a character, rightly esteemed the peer of any man.

Discussion.

The lecture was followed by an interesting and, at times, lively discussion, on the practical value of the agricultural college and of modern, scientific methods of cultivation.

Benjamin P. Ware, in his preliminary remarks said, that the farmers of New England are having a hard enough time to make a living by farming and that the United States Government is attempting to help them.

He thought we were fortunate in having the lecturer show us what was being done to aid the farmer, and that a good deal of information had been elicited.

A young man inquired as to whom he should apply for particulars concerning farm management, and for the government publications.

Professor Walker replied that letters may be directed to the Secretary of Agriculture, at Washington, and that they would be referred to the proper department. For special publications one should apply to the Congressman of his own district.

Varnum Frost spoke on the topic of the day substantially as follows:

I wish this scientific method of farming was as valuable as they are trying to make it out, but I can't see it. The United States Department of Agriculture spends five millions of dollars a year and supports four thousand employees. They get the benefit of it, while the farmer is growing poorer and poorer.

In fact scientific knowledge is not necessary for good farming. Running a farm is a simple business and can be learned by experience and observation — three-fourths of it observation.

There is no need of spending so much money as is being done by the government. I know of most successful farmers who cannot read or write.

Mr. Ware. In reply to our friend Frost, according to the statistics, not over four per cent of those engaged in mercantile business succeed. Does Mr. Frost know of a single farmer, who has attended to his own business, who became a bankrupt?

The time has come where there is no excuse for a farmer to make butter that has to be sold to the renovator for twelve cents

a pound when information is at hand that will enable him to get thirty cents for it.

A farmer today has no business to be an uneducated man. Facilities are freely offered him by the agricultural college; and the Farmers' Bulletins of the government are to be had for the asking. The money paid out by the government has been returned over and over again in the advance made in agriculture.

We do not want to go into a pessimistic discussion; it does not belong to the business, for farming is an optimistic employment.

The farmer of today should be an educated farmer, and there is no excuse for his being otherwise.

Mr. Frost. Do you think that the agricultural college can graduate a good farmer, ready to take up the work of a farm and to carry it on successfully?

Mr. Ware. Not only that, but there are hundreds of graduates who are already successfully occupying positions as superintendents and teachers, all over the country.

Mr. Frost. I have had students come to me from the agricultural college who wanted to go to work to learn the business. It is almost impossible to get a man who has been educated, who is willing to work on a farm.

Mr. Ware. They could not have gone to a better man of whom to learn the business.

Michael Sullivan. I do not like to speak in opposition to my old friend, Frost, whom I have looked up to from boyhood. When we speak of agriculture, here in Massachusetts, it is hardly worth while to compare it with that of the great West.

The work of the government is not especially valuable to the market gardener, although I have received good from it, but to the cultivators of special crops, on a large scale in the West, it is of great value. Mr. Frost takes a local view of the subject and while New England farming is not on the increase there is a living in the business today. I know men who not only make a living at it, but stand well as citizens in their respective towns, and also take a prominent place in the affairs of the state. The college at Amherst not only makes a man competent for his work but fits him for the higher walks of life. That is the kind of life I see for the New England farmer. I doubt if Mr. Frost seriously thinks as he speaks.

The Sabal Palmetto.

Isle of Palms, South Carolina. Photographed by Miss E. G. Cummings, March 23, 1902.

Mr. Frost. Farming is the tag end of all business, the last resort of broken down professional and business men who cannot get a living at their occupations and so turn to the farm as a last resort. I defy any man in Massachusetts to assume a liability of ten thousand dollars and ever be able to pay it up by farming. The business is growing less every year. What I have I earned forty to fifty years ago. There is no money in the business now.

Mr. Ward. I know of a man, a graduate from an agricultural college, who has been successful as a farmer and has made money. Things learned at the agricultural college, if the knowledge is used, will be a helpful aid to success.

Mr. Sullivan. I want to say this, I regard my farm as a savings bank into which I put the labor of every day, and it is a sure accumulation for my family.

Mr. Ware. Mr. Frost spoke one truth and paid a high compliment to farming when he stated, that when a man has failed in other walks of life, he turns as a last resort to the farm. Yes, agriculture stands open to receive him and grants him a success that he could not otherwise attain.

MEETING FOR LECTURE AND DISCUSSION.

Saturday, February 14, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President Hadwen presided and the following lecture was delivered :

Characteristics of Some Southern Trees.

By Miss Emma G. Cummings, Brookline.

As we left New England in the bleak days of March, for a visit to the milder southern states, the first thing to attract our attention was the conspicuous amount of green in the landscape as compared with the prevailing brown tones of the north. The people of Virginia must have been fond of planting weeping

willows, and truly, their fresh feathery green leaves expanding so early are an attractive feature of the cities and towns. The woodlands are dotted with the deep pink blossoms of the Judas trees; a shade of pink that might not be called pretty in itself, but in combination with the green of the willows forms a pleasing scheme of coloring.

While there are other green trees than the willow, this is not entirely due to the warmer climate, where leaves open earlier, than with us, rather is it due to the fact that there are more evergreen shrubs and trees in the South. Many of these cannot grow in the North, others like the rhododendron, kalmia or mountain laurel which grow sparingly with us, clothe many a slope of the southern Alleghanies with green shining leaves, and along river-banks the rhododendrons often make impenetrable thickets. More especially is there a greater variety of the broad-leafed evergreens, the most prominent trees being the magnolia, holly, (*Ilex*) live-oak, and palmetto.

The magnolia (*Magnolia foetida*) has been freely planted in the parks and gardens of Washington, and from there southward is both a prominent decorative feature of the cities, and conspicuous in the forest. Fine old trees of live-oak (*Quercus Virginiana*) are growing in Fortress Munroe and they entirely compose the Park along the water front in Charleston. The trunks usually divide a few feet from the ground and form many wide-spreading branches, often from one hundred to one hundred and fifty feet across.

In the early part of the last century the United States Government bought in the Gulf states large tracts of land covered with live-oak, because the wood was regarded as especially adapted to ship building; and large quantities of it were used in the construction of warships before the substitution of iron. Since the Civil War the reservations have been neglected, and occupied by people who cleared the ground for planting. In 1895 all the reservations, except those in Florida, were transferred from the Navy to the Interior department and opened to the public.

The most unusual looking tree to northern eyes is the palmetto (Sabal palmetto) which makes the traveler feel at a

glance that he is approaching the tropics, so associated in our minds are all palms with warm countries. The palmetto grows singly or in groups in the sandy soil of the islands and along the coast of South Carolina to Florida. In some protected places it is found in large groves, but seldom more than thirty to forty feet high. The trunks of young trees are covered with the sheaths of dead leaves which gradually fall off as the tree heightens, leaving a much-scarred surface, to show where the base of the leafstalk clasped the trunk.

The leafstalk is connected with the trunk by a series of threads or fibres. These descend in curves through the whole trunk of the tree, a structure peculiar to palms, interlacing with fibres from the other leaves in such manner as to produce great resisting power. The following story will illustrate this.

Palmetto trees did such good service in an important event in the early history of South Carolina[1] that the memory of it has been perpetuated on the coat of arms and on the seal of the state, which since then has been known as the Palmetto State. In May, 1777, the soldiers under Captain Moultrie were obliged hurriedly to construct a fort to protect themselves from an attack by the British fleet. For this purpose they used the trees that were growing on the shore and the balls of the enemy either passed over or lodged in the spongy wood. Thus the small garrison within were enabled to repulse the foe. To commemorate this event the state seal shows an oak without branches, at the foot of an upright palmetto, signifying the victory of the palm over the oaken British fleet.

Serving a valuable purpose in war it has served many in peace.

This is the tree which is commonly called cabbage palmetto because the growing tips are cut off and eaten as a vegetable by the negroes. They consider them a great delicacy. A far greater destruction in their ranks is caused by using the buds for scrubbing brushes. From three to four feet of the top are taken off, and after removing from the centre the tender young leaves, the remainder is boiled, shredded by machinery, and made into brushes. A factory in Jacksonville has converted as many as 7500 of these buds into scrubbing brushes in a single week. The

[1] History of So. Carolina. Macready. Vol. I. 215.

leaves serve as a thatch covering for roofs, and also find their way into market under the guise of hats, mats, fans, and baskets. The large demands made upon this tree for the service of Palm Sunday is still another cause of its diminution. One firm in Boston supplies all the churches in New England, so they tell me, receiving each year 200,000 leaves.

We had often heard of and had seen pictures of the long-leafed pine, but our first real acquaintance with it was when we stepped from a sleeper one morning and found ourselves surrounded by them, at Pinehurst. This well-known health resort in North Carolina, as its name indicates, is built among pines. These pine trees are of three species, one with short leaves, growing in clusters of two, called the short-leafed pine (*Pinus echinata*), is of wide distribution, found from southern New York to Texas. The other two species, the loblolly and long-leafed, have their leaves in clusters of three. The loblolly or oldfield (*Pinus taeda*) has leaves from six to ten inches long, and is generally seen with innumerable cones, its larger, longer-leafed neighbor, commercially the most valuable of the three, is known as the long-leafed pine (*Pinus palustris*). These last rise tall and straight with no low limbs and the crowded clusters of long dark green leaves form dense tufts at the ends of the branches. There are not many fine specimens in Pinehurst and some of the young trees growing well apart from each other are too slender to stand erect.

The soil of the region is sandy and the level country stretches in every direction for many miles, one road being so like another that with no sign boards, it is easier to lose one's way in these woods than to keep on the right path. The roads are very poor, not much more than cart tracks, and generally without bridges across the streams, so that a horse and carriage has always to ford and pedestrians cross on logs.

These piny woods or pine barrens are from fifty to one hundred and twenty miles wide and extend for a long distance nearly parallel with the coast. The higher portion is covered almost exclusively with the long-leafed pine, but it has been cut from the lowland close to the coast, and is now being replaced by less valuable growth. Originally it skirted the entire coast, with the exception of the southern portion of Florida, from the extreme southeastern

part of Virginia to Louisiana and Texas. Working plans have recently been prepared by the Bureau of Forestry for over a million acres (1,250,000) in Texas. It is also found with a mixed growth of other pines and hard woods on the lower slopes of the Appalachian Mountains at an altitude of two thousand feet. This is, covering as it does thousands and thousands of square miles, a wider distribution than is claimed for any other tree in the southern states.

A fourth species of pine growing from South Carolina southward is the Cuban. This so closely resembles the long-leafed from which formerly it was not distinguished, that it is often cut and sold under that name.

The same confusion exists in the South as here with regard to the use of popular names, and the long-leafed pine has a dozen or more designations; chief of these are southern yellow, North Carolina pitch, Georgia, Georgia long-leafed, Florida yellow, Texas yellow, and long-leafed.

The largest forests used to be in the state of Georgia which has given one of the popular and best known names to the tree, Georgia pine. These once magnificent forests have been practically exhausted by tapping the trees for turpentine, and cutting for the lumber market. That their extermination is but a question of a short time is easy to believe after reading the government report[1] which states that in 1890 one hundred and seventy-five mills in five states[2] (eighty-eight in Georgia alone), were sawing exclusively long-leafed pine timber.

The seedlings of the long-leafed pine look like tufts of grass and, scattered among its coarse growth, one could hardly suspect they were anything else. They grow but little in height for several years, giving most of their nourishment to the development of a strong root system, by which they are better prepared to live in soil where the water supply is scanty.

A plant two years old is not more than one and a half inches high, while the taproot is often two or three feet long. The slow upward growth continues until the plant is about seven years old and as many inches high, when its period of most

[1] Timber Pines of the Southern United States, by Charles Mohr, Ph. D.

[2] North Carolina, South Carolina, Georgia, Alabama, Mississippi.

vigorous growth begins, and it doubles its height in a year. Had I suspected their age I would not have been guilty of cutting some to send home to friends.

When the plants are only several feet high they are very beautiful and look like green plumes. Such great quantities are cut in this condition every winter and sent to our northern markets for decoration, that it should seriously be considered as a menace to the extermination of the young trees. The leaves remain green for a long time and put in flower-pots they look like growing plants. In this fashion they have been used extensively for church decoration. They have been also on sale at the florists in Boston this winter. In Washington last winter at the time of Prince Henry's visit the steps of the German Embassy were decorated with them and they made a beautiful effect. The leaves on this young and vigorous growth are from a foot to a foot and a half long, but on old trees they are shorter, often not more than eight inches long. At the tip of the growing shoot is a beautiful silvery-pointed bud, partially concealed by the length of the leaves.

The largest remaining forest of this species to be seen in the State of North Carolina, so we were told, is within fifteen or twenty miles of Pinehurst. It is known as Ray's Forest and covers an area of only 2300 acres, whereas formerly it was estimated that this tree covered about 15000 square miles of territory in the State.

A walk or drive through these woods presents a very different effect from the dense shade of our northern forests, owing to the absence of the lower branches and the freedom from underbrush. The foliage being clustered at the tops of the trees leaves long vistas of straight columns outlined against the sky. Here and there through the woods we came upon a few deciduous trees, such as buttonwood (*Platanus occidentalis*), red maple (*Acer rubrum*), and the black-jack (*Quercus Marilandica*), and the willow oak (*Q. laurifolia*). There are also occasional patches of low, swampy ground where alder (*Magnolia glauca*), horsebriar, and *Leucothoë* grow. This last, a broad-leafed evergreen shrub has, by the by, been planted at the foot of Hemlock Hill in the Arboretum. In winter those who know where it is

to be found enjoy its sprays of shining green leaves arching over the snow-covered ground.

Unfortunately this Ray's Forest is doomed to an early death, for in three years, if the present plan of getting turpentine and subsequently cutting the wood is carried out, not many trees will be left standing. Exception has been made of a few which are to be reserved as specimens and are spoken of as round timber because they have not been cut or tapped for turpentine. It was a strange and peculiar sight to us to see the trees stripped of their bark for several feet from the ground. This is done in connection with one of the most important industries in the state, known as the Naval Stores Industry, probably because its products have been so extensively used for vessels and in ship yards. It consists in gathering a resinous substance from the trees, and converting it into the resin of commerce and spirits of turpentine. Indirectly tar and pitch are included. Tar is produced from dead wood and thoroughly seasoned stumps. These are gathered, put in a clay-lined pit, set on fire and loosely covered with earth. After nine days of slow burning tar begins to flow into a hole some three feet away with which the crude oven is connected by an underground channel. The flow continues for several weeks. Pitch is obtained as a result of boiling down the tar. We passed the blackened pits where this process goes on.

The resinous substance is not the sap but comes from ducts in the inner wood of pine trees and flows more freely from the long-leafed pine than any other tree in the United States.

Unfortunately we were too early at Ray's Forest to see the flow of turpentine, but the overseer was kind enough to explain to us the process, beside calling a workman to cut a tree and collect the dippings, that we might take some photographs.

The turpentine is obtained by removing the bark on the trunk of a tree and cutting into the wood when a liquid exudes in large quantities. The wood is cut in diagonal grooves from both sides toward a central perpendicular line or track down which the liquid flows into a deep cavity, hollowed out in the trunk, near the base of the tree. This is called a box and the whole process is known as boxing the trees. The boxes are made usually eight to twelve inches from the ground and hold about three pints.

As soon as the liquid ceases to flow freely the upper ends of the Y shaped gash are cut or chipped again, about a quarter of an inch at a time being removed or just enough to expose a fresh surface of the wood. The cutting is done with a peculiar tool called a hacker which has a heavy iron ball about four pounds in weight at the end of a short handle, and is designed to make the work of chipping easier, by giving greater force to the strokes. The boxes are cut in the winter and the flow begins about the first of April. It is most abundant through the summer and ceases in October or November. The chipping must be done nearly every week thus increasing the length of the exposed inner surface from one and a half to two inches a month. At first cut about seven inches in length the wounds gradually extend upwards until, upon trees that have been worked for many seasons, the upper end may be fifteen or twenty feet from the ground.

From one to three boxes are made on each tree. If boxed on one side only they can be worked for ten or fifteen years, for after a rest of several years new boxes are cut, but if at first the bark is cut all around the trunk the trees are killed in three years time. Once every few weeks the resin or dippings is gathered from the boxes with steel spades, put in buckets and transferred into barrels to be taken to the distillery or still, where the resin and turpentine are separated.

The overseer went to the still with us and explained the process. When the turpentine is heated to the boiling point it flows from the vat with a stream of water through a coiled pipe, called the worm, which is surrounded by cold water. The liquid as spirits of turpentine falls thence into a receptacle, the water at the bottom; this is allowed to run off and the spirits transferred to barrels. The thicker portion as resin flows in another direction into a trough from which it is also dipped into barrels. The first year's yield is white and is known as "Virgin Dip" but each succeeding year the liquid grows yellower and darker.

The trade in turpentine and the manufacture of tar and pitch were started in North Carolina by the first settlers and in Colonial times these products furnished the chief exports of the colony. In 1770 their value amounted to $215,000. In 1890 it had

increased to more than eight million dollars ($8,135,339). This country has for many years supplied a large part of the world's demand for these substances, but the industry is doomed to destruction unless a different method is substituted.

In France the work is done more intelligently. Instead of cutting the whole side of a tree they cut a narrow groove and fasten at the base of it a small earthenware pot in which the resin collects. In time this heals over and another groove is made in a different place, while the tree is uninjured. A similar plan of using an earthen pot or cup has been patented by a man living in Louisiana, and it is to be hoped that the method will come into general use in this country. It will both save the trees, and economize the resin, for it is designed to move the pot upward as the scar is lengthened, thus reducing the distance over which the resin flows. The permanent boxes in the trees are gathering places for chips and dirt, a difficulty which the new method avoids.

Since writing the above I have learned that the Bureau of Forestry has been conducting experiments under the direction of Dr. Charles H. Herty which have proved the great superiority of the new over the old system. The trees have yielded twenty-three per cent more turpentine, an increase in one year sufficient to pay for the new equipment and to furnish a profit besides. It is expected that in a short time the new system will be in general use.

A lumber company has established itself in Ray's Forest with the intention of cutting down the trees as soon as the turpentine company has finished with them, having paid for the privilege at the rate of ten dollars an acre. Such land without the trees is of little value, often being sold for fifty cents an acre.

Many lumber dealers believe that the strength of the timber is affected by the drawing off of the resin, bleeding as it is called, but experiments by the Department of Agriculture have proved that bled timber is as strong as unbled if of the same weight. The value of the outside planks is a little less because it is from the sap wood that the resin is drawn off. It cannot be removed from the heart wood.

In all forests of long-leafed pine where turpentine is gathered it

is customary in the spring to clear away from cut trees chips of the bark and other refuse matter in order to lesson the chances of fire. At first it is raked in a circle around the trees and the debris is afterwards gathered into heaps and burned. The fire often spreads to old stumps likely to be covered with resin, perhaps to the young trees, as well as the older ones that have been abandoned in the turpentine orchards. Many of them charred and blackened remain standing until blown over by the wind.

The wood is so resinous that kindlings in building a fire are unnecessary, as we had occasion to know. Apply a match to a log and it will immediately take fire and burn. This quality that is so convenient indoors proves most disastrous in the forests.

Fires due to various causes always have been and still are of frequent occurrence in these pine forests, even owners of the land set fires every year to improve the pasturage for their stock. Burning is supposed to stimulate the growth of weeds and grasses, but of course continual fires gradually consume the fertility of the soil and destroy the seedlings. We saw one or more of these fires every night to which no one seemed to be paying any attention. The people appear to be indifferent to what is considered by them as almost unavoidable. Long stretches of woodland in various places do not appear to have any seedlings, then in other more protected spots there are great growths of them. Other causes of destruction to these pine forests are in the pasturage of cattle who eat off the tops of the young trees; hogs are always allowed to roam at large through the South and do much injury by digging up and eating the tender roots of the young plants; and squirrels pull the cones to pieces to get at the sweet seeds.

It seems marvelous that under these adverse conditions any seedlings escape destruction and more especially when the fields of burned stumps bear such evidence of continued fires.

Another conifer of great interest, not an evergreen, grows along the low coast lands of the Southern States, sometimes following up the rivers for several miles. Unlike the long-leafed pine this conifer, the deciduous or bald cypress (*Taxodium distichum*), needs a great deal of moisture and grows in wet swampy soil that is often flooded for weeks at a time; so that

the young plants are wholly covered with water. It must be a desirable condition, for the old trees grow to a large size. Fortunate it is that some trees prefer the swamps and some the dry sandy plains that both may be clothed with verdure.

Pinus palustris, the long-leafed pine, so it seems to me, is unfortunately named, as we did not see nor hear of its growing in swampy ground although palustris means a swamp.

We went through the Dismal Swamp Canal and to Drummond Lake for the purpose of seeing the bald cypress trees. We were told they could be seen to good advantage in this region, and, furthermore, we knew that some years ago the Geographical Society of Washington had thought it worth while to make this trip.

A canal boat leaves Elizabeth City in North Carolina every other day and starting from that point we found the first ten or fifteen miles of the route was on the Pasquotank River, which grew narrower as we ascended until we were close to the banks on either side. The cypress trees were numerous and conspicuous, just coming into leaf. Some trees were reddish-brown and some yellowish-green in color. In contrast with this delicate green were the brilliant colored keys of the red maples, everywhere abundant through the woods.

We entered the canal which stretched out before us in a nearly straight line for twenty-two miles, connecting with Deep Creek at a point seven miles from Norfolk. In order to deepen the canal recent dredging had drawn away the water in adjacent lands from the roots of the trees and their bare branches testified that hundreds of them had been killed in consequence. The mud had been deposited upon the banks making them very unsightly. In some places however they were covered with plants conspicuous among which was the *Gelsemium*, commonly called jessamine, with its bright yellow flowers trailing over the ground.

From time to time we passed small settlements and there are occasionally large farms, from which vegetables are shipped to our northern markets.

About midway of the canal a small side canal, its banks covered with a growth of horsebrier and wild roses, leads to

Drummond Lake which is off the direct route and has no regular communication with it. So after all we had to make a separate excursion to Drummond Lake, the objective point of our canal trip, taking a launch from Norfolk there and back on another day. Altogether the visit was a disappointment, first, because the wind was blowing like a hurricane when we were there and it was not considered safe to go out upon the lake, which covers an area of about twenty square miles; and second, because there was no chance to see the peculiar cypress characteristics. As far as we could see around the shore most of the trees appeared to be dead due to the lowering of the water.

We saw some of these trees to much better advantage on the James River and also while driving near Suffolk, coming unexpectedly upon them as they stood in the water on the borders of a small stream. The two forms of growth which this tree assumes were quite noticeable, the erect pyramidal or fastigiate form, common to young trees, and the broad summit, often one hundred feet across, and rounded outline of older trees, which generally loose their lower branches, the upper ones curving slightly downward. Where a tree stands alone or a few grow together in cultivation they show the pyramidal form as the one grown in Brookline, or as groups of them do in Central Park, New York.

They have also two forms of leaves, the one pressed close to the branch the other standing at right angles from it. They may appear on the same or on different branches of the same tree, or on separate trees. Trees with both forms of leaves are growing side by side at the Arnold Arboretum. The foliage is very delicate and fern-like and its beauty makes the tree desirable for cultivation.

One of the peculiarities of the bald cypress is the enlarged trunk near the base where it slopes outward, looking like an inverted vase; but the most striking characteristic is a series of projections from the roots, known as cypress knees, an arrangement, so it is thought, for supplying them with air; and as water often covers the ground around the trees to the depth of several feet, the roots, of course, must have air. This is conveyed through the hollow projections which grow on the roots and rise at least

high enough to be above the usual high-water mark. One traveler in Florida relates that he rode among them where they were not less than seven feet high.[1] If, perchance, the water rises so high as to cover these for many weeks at a time, the trees die. When the water recedes and the knees can be seen at a distance, they give the effect of low stumps, often as many as seventy-five or one hundred springing from the roots of a single tree.

This is the generally accepted theory of the purpose of the knees, still they have puzzled and have given a good deal of cause for speculation to botanists.

Michaux writing in 1819 said "no cause can be assigned for their existence," and even as late as 1882, as eminent an authority as Dr. Gray, said that "the use to the tree of the knees is unknown." Some authorities believe that their purpose is to strengthen the root system. From the under side of the horizontal roots large anchor roots are sent off at right angles into the ground, which help to hold the tree firmly in the swampy soil. The knees chiefly occur opposite the anchor roots and no trace of a leaf, bud or sprout has ever been found upon them, except where some seed may have lodged in a decayed portion of the surface and then taken root.

Mr. Lamborn in an article contributed to Garden and Forest in January, 1890, describes some trees that "stood in sand so loose that when the level of the water was lowered the waves readily washed it away and carried it into the depths of the lake." He says, "some four feet of the root system was thus finely exposed. After several days spent in examining a score or more of large trees that had been thus denuded I became convinced that the most important function of the cypress knee is to stiffen and strengthen the root, in order that a great tree may anchor itself safely in a yielding material." When the tree grows in firm ground or where the roots can obtain a hold in the ordinary way knees seldom if ever develop.

The wood of the cypress is very valuable for lumber, being used for a great variety of purposes, and varying in color with

[1] Lamborn, Garden and Forest. III. 21.

different localities. In the last twenty years it has largely taken the place of white pine (*Pinus strobus*) which has become more and more scarce in the market.

The vicinity of the Gulf of Mexico is the region where the largest trees are found, for the cypress ranks second in size of the deciduous trees in the United States and the wood is said to be of the best quality. In such places as this the trees are usually girdled six months or more before cutting in order to stop the flow of sap. This causes the log to be somewhat lighter in weight, otherwise it might sink as it rolls over into the ditch which is dug out for the purpose of getting the logs to the river, where they are rafted together and floated down to the mills. The cutting often has to be done by men in boats.

No other tree grows surrounded by so much water and for centuries they have stood in marshes apparently undisturbed by storm or flood. In wet places especially this tree grows as does the long-leafed pine in areas of pure forests, but as we saw it along the Pasquotank River in drier ground it was growing with red maple and liquidambar. On the Ashley River near Charleston *Tillandsia*, or southern moss, grows upon its branches. This plant loves moisture and in the damp woods of the South often veils these trees, as well as other kinds, with its abundant growth.

Of this remarkable tree Professor Sargent says "it is the glory of the maritime forests of the South and one of the most valuable and interesting trees of the continent; the bald cypress with its tall massive trunk rising high above waters, darkened by the shadows of its great crown, draped in streamers of the gray tillandsia, is an object at once magnificent and mournful."

As we left the lowlands for the mountainous district we found coniferous trees fewer and the deciduous trees more and more apparent. Red birches (*Betula nigra*) grow along the banks of the Swananoa River at Biltmore where they attain great size. The red fluffy character of the bark as seen on young trees at the Arboretum has there entirely disappeared, unless it be from the upper branches, and the trunks look old, subdued, and gray. These trees are estimated to be one hundred and fifty years old or more. Leaning over the water, as is their habit, they give a very picturesque effect to the river. Beneath their shade along

the banks grows a tall reed or cane resembling bamboo. When we saw it the dried leaves of last season were still clinging to the branches.

On the estate known as the Biltmore Forest the trees are small, owing to the fact that before Mr. Vanderbilt bought the land it was owned in small lots by more than three hundred poor farmers who were in the habit of cutting all trees that could be used, and in the ignorant and careless felling injured the young trees. Cattle and fire helped on in the general destruction. So that when the forest was put under scientific management in 1902 it was found to be in a very poor condition. In the ten years that have elapsed since then great progress has been made toward restoring the woods to a production of desirable species.

A short distance from Biltmore we saw the Carolina hemlock (*Tsuga Caroliniana*) and the dark slopes of the high mountains we learned were covered with Fraser's fir (*Abies Fraseri*). Both this hemlock and fir are found only in this vicinity. Indeed we learned from botanists at Biltmore the location of many rare trees and shrubs, growing only locally. These same botanists think the mountains of North and South Carolina the most interesting botanical region on the Atlantic Coast, partly because of the local plants, and partly because of the great variety of species native to the region.

The general appearance of the forests so far as the traveler can see shows many traces of fire and flood. The largest number of fires have been set by farmers, who burn over the ground in autumn in the belief that better pasturage for their cattle is obtained the following spring. Fires thus started often spread beyond control and burn over large woodland areas. Added to this, injudicious cutting has exposed many hill slopes to the weather. Consequently, last year when heavy rains followed an unusual fall of snow, they caused the most disastrous flood ever known in that region. We saw many traces of its destruction, especially on the French Broad River in the western part of North Carolina. In the State of Virginia these conditions are even more noticeable, where many of the hillsides are strewn with burned or partially decayed timber.

It was in the mountains of South Carolina that we saw the

largest and finest trees. Leaving the railroad at Seneca we drove twenty-five miles up a river valley, whither we went for the purpose of seeing that most interesting of all American flowers, *Shortia galacifolia*, little coltsfoot, the natives of Jocasse Valley call it. At first our route lay over a dreary stretch of country where dead pine trees stood in various stages of decay. They had been girdled for the purpose of killing them. This the settlers do to clear the land for planting corn and cotton, in many cases not even removing the stumps. We passed through many such fields until we came to a growth of hard wood, oak predominating, with mistletoe growing upon its branches.

Our guide learning of our interest in trees offered to show us some exceptional ones, as he thought, if we would give another day for such an excursion. It proved to be a day's tramp there and back from the valley, but we felt well repaid for all our trouble in crossing streams and climbing through rhododendron thickets, until we finally came to the big timber. We saw chestnut trees (*Castanea dentata*) fourteen feet in circumference, tulip or yellow poplar (*Liriodendron tulipifera*) more than sixteen and a half feet in circumference, five feet from the ground, a liquidambar or sweet gum (*Liquidambar styraciflua*) nine feet, sending its straight trunk into the air for one hundred and twenty-five to one hundred and thirty feet, with at least seventy-five feet clear of branches. A great variety of trees contributed to the majesty of these hillsides. There were black walnut, black birch, ash, persimmon, hemlock, and pines. There are said to be over one hundred different kinds in these mountains, and it seems probable that the long distance from a market is the reason why so much virgin timber remains untouched.[1]

Best of all, the ground beneath our feet was carpeted with the shining evergreen leaves of *Shortia*. A sight of this beautiful

[1] It was a pleasure seldom experienced to be among trees that were not contributing their foliage for decoration like the palmetto, nor yielding material for commercial purposes like the pine and cypress. It was simply a region of beautiful trees in a quiet and peaceful valley far from the buzz of machinery and the bustle of the world. It was a satisfaction indeed to see trees that were not in any way contributing to the demands of commerce, and I might add one word more and say that it was just this fact that gave them a special interest.

flower in bloom in its native habitat, was the crowning point of our trip, and gave an added zest to the interesting story of its rediscovery in this country, after having been lost to scientists from the time of Michaux' visit to America in 1785, to the latter part of last century, a period of nearly a hundred years. With this picture I will conclude, hoping that I have been able to convey to you some of the interest and enthusiasm I felt myself in these trees, and perhaps to excite a longing to see for yourselves some of the wonders of our southern forests.

[The lecture of Miss Cummings was illustrated by numerous lantern slides, showing pictures of many of the trees and plants mentioned, as well as views of interesting southern scenery. One of the views is herewith reproduced.]

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 21, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President HADWEN presided and the following lecture was delivered:

THE APPLE AS A MONEY CROP FOR NEW ENGLAND; ITS CULTURE AND PREPARATION FOR MARKET.

BY F. C. RICHARDS, WILLIAMSBURG, MASS.

In order to consider our subject intelligently we need to approach it from three sides.

First, soil and climatic conditions; are they favorable for apple production?

Second, from the commercial side; will it pay?

Third, individual preparation, or am I, as an individual, in any way qualified to engage in orcharding?

As to the first proposition we would say that New England has not yet awakened to the possibilities that lie before her in the way of apple culture. The markets of our own and of foreign

countries are open to us, and well-selected stock of New England packing commands a premium in our large markets above Missouri, Michigan, or New York State packing, or that of any other part of our country. Illinois formerly aspired to be our banner apple state, but her product was deficient in keeping quality and in flavor, and for the past few seasons we have shipped thousands of barrels of apples to Chicago and other western points, and Chicago and other western commission houses are sending their circulars and market quotations all through our New England states.

The same conditions hold good with the Michigan and York State packing, however large and fair the fruit may be and however well-selected, it is taking second rank in the markets because of its poor-keeping quality, and the hard, well-keeping fruit of New England is taking front rank with both dealer and consumer.

I care not to what extent apple orcharding is increased in any part of our country, we in New England can successfully compete with them all, if we but pursue correct methods and if the above statements can be substantiated, as I know they can be, by inquiry of the reliable wholesale dealers in any of our large markets, is it not well for us to take into serious consideration if it would not be profitable and wise for us to engage more extensively in apple culture? We, as individuals, as a community, and as a section of our state, might double and treble our present output, receiving two or three times the amount of money we are now receiving for our product, and with a more extended territory devoted to orcharding, western Massachusetts would soon be recognized in the markets as the great apple-producing belt of the Old Bay State.

Capitalists are quick to see the requirements of the market, and the peculiar adaptation of our soil and climate to the growth of the apple, if those occupying the lands do not, and so it has been proposed to form a corporation of capitalists and practical orchardists, to engage in extensive orcharding on the cheap lands of northern New England. This is just what we do not want, if our farmers will engage in orcharding for themselves. The fruit corporations of California may be, in a way, necessary where they

are at a long distance from markets, but with the necessity there is also a disadvantage to the individual growers, who are largely within the power of the corporations and who can, in a majority of cases, only dispose of their crops through them, and it would eventually work the same way here. If fruit corporations establish themselves in our apple-growing sections, and if they are successful, the outlook of the future for the individual grower is not very encouraging. We are not acquainted with the details of this plan, and it may be better than we think, but however great the advantages may be on one side (and there are, of course, certain advantages in such a corporation), there are also equal disadvantages on the other side, or rather, the advantage enjoyed by the corporation will, by its very nature, work to the disadvantage of the individual grower, and, in the end, be detrimental to his best interest.

We would strongly recommend coöperative packing houses, centrally located in an apple-growing district, where the fruit can be properly and uniformly packed, and put in the best shape for market, and market requirements of the not distant future will probably make some such method necessary. We hope it will, but we strongly disapprove of an orchard corporation controlling a large extent of land in a section, making themselves the trade centre of that section, and practically controlling the crop of an entire district. If the plan can be made to work successfully, there is danger in it for the individual grower, and we do not want it, but what we do want is for the individual farmer, who is alive to his best interests, to plant one hundred, five hundred, or one, two or three thousand trees or more, as his inclination or circumstances will allow, and in a few years our present barren hillsides would be a scene of beauty and fragrance in the springtime, and a blaze of color and source of profit in the autumn. We want something whereby we can see that our work and care is bringing us a gain instead of merely holding our own, something that will build up our homes, and make us prosperous as individuals, as a community, and as a section, and I firmly believe that the intelligent culture and handling of the apple would do this for us. It would be a great factor in solving the problem of the future prosperity of our rock-bound New England hillsides.

It is a duty that we owe to ourselves, and those who succeed us, to develop to its utmost the industry that seems most natural to our soil, and we believe that the next decade will witness a very perceptible increase in our area of orcharding.

But the question with many who are favorably disposed toward orcharding is, How to start and care for one? There is nothing new to be said about this; so much has been said and written from time to time, through books, the agricultural press, and through speakers, that the entire ground has been practically covered. Each step necessary in the planting and care of an orchard could easily require an extended address of itself in order to do it full justice, but there are a few principal points upon which we will just touch and give them a hasty review.

The first question that often presents itself to the would-be orchardist's mind is, Have I a favorable location for an orchard? As already indicated, that need not concern us over much. Here on the hills of New England Dame Nature has already settled that question, and the favorable location is all around us. I know there are theories that certain exposures are the best, and that land should slope toward the east, or the south, but what we are after are apples, regardless of the exposure of the land, and if your soil is such as will produce you fair crops, apples will grow there and you may feel safe in planting an orchard.

In a day's ride you can see orchards exposed to all four points of the compass; wild trees come up by the roadside and in out-of-the-way places, and seem to be indigenous to the soil, so far as any particular lay of the land is concerned.

I would only say in exception to this, that if we wish to get good fruit, the best fruit, to flee to the hills; get up out of the lowlands by the streams, and on to the everlasting hills, where God's glorious sunlight will give the vivid color, and as the mellow autumn days approach, will add the richness of flavor, and where the breezes will play freely among the tree-tops. Oh, give us, by all means, the steep and rugged hillsides for the apple in its perfection.

In preparing the soil for planting it is best, if it can be done, to plow a strip ten feet wide or more, where the rows are to be, pulverizing it thoroughly and making it as mellow as possible.

But if the trees are to be planted when it is not possible to plow, then dig the holes four feet square, and to the depth of two feet, taking out all stones, and working, so that when completed, the soil will stand cone-shaped in the center of the hole.

If the trees are to be planted in the spring, it is better to do this work the previous fall, so that the alternate freezing and thawing during the winter will pulverize the soil more completely. It is of the utmost importance that the soil should be made as mellow as possible, that the roots of the young tree may meet with favorable conditions. Too many neglect these precautions when transplanting and their efforts result in failure. It is not at all surprising that so many trees die after transplanting, when we take into consideration the careless and neglectful manner in which the work is performed. The suitable preparation of the soil is one of the first essentials in starting a young orchard, and should be attended to with great care. Any neglect here will manifest itself very quickly in the growth of the orchard.

Selection of trees:— This is a matter of prime importance and requires care and considerable experience. It is better, if one can do so, to go to a nursery and select for oneself, or, if not enough are required by one person to pay the expense of such a trip, let a neighborhood, or enough persons who are interested join together and send one of their number to make selections. And in making selections do not always choose trees that show the largest size but have more regard to their general thrifty appearance. Those that stand upright and have a stocky, thrifty appearing body and branches are best. One can easily detect such trees in the nursery rows after suitable practice. As indicated above, it is not always the largest trees that are the best. Many times the tree that stands four to five feet high in the nursery row will, after transplanting, overtake and surpass the one that stands from five to seven feet; nor is the cause of this hard to explain. The smaller tree can be taken up with greater care and consequently have more perfect roots than the larger one, and, other conditions being equal, they will become sooner established in a new location, and are much more likely to live. Another important point is, to avoid those trees that have only two or three main branches leaving the body; they are quite liable to split down

when they come into bearing, and the tree be ruined. This is especially true of the Baldwin. Have at least four limbs, and five or six are better, branching from the stem as nearly opposite one another as possible. These branches, as they attain their growth will form a solid knot, that any strain coming on the limbs when heavily loaded, will not be able to split down. There is also a danger, where trees have only two or three main limbs, that water will enter some slight crack during the winter, and, by freezing, will, in a few seasons, split it apart and destroy the tree.

The next consideration, after a suitable selection of trees has been made, is the proper mode of setting them. How many orchards have been practically ruined by setting the trees too near together, and by lack of care in the disposition of roots in the holes and a general lack of care and intelligence as to details during the entire process. Forty feet apart each way is near enough for standard trees. This seems a long distance when the trees are first set, but as they reach maturity, it is none too much to allow free access of air and sunlight to all parts of the tree, which is quite essential in securing the best fruit for market.

When setting the tree, trim off all bruised and mutilated portions of the roots, and also cut back the previous year's growth to correspond with the cutting back of the roots, or, if severe root pruning has been necessary, the shoots may be cut back to one or two strong buds just above the previous year's wood. This is made necessary for the reason that the leaves of a tree are continually drawing from the roots, and throwing off a large amount of moisture, and if we diminish the supply from the roots by pruning, we must also make a corresponding decrease of the leaves to be supplied by them. Be careful to plant the tree no deeper than it was when standing in the nursery row, and be sure to see that the roots lie in a natural position, drawing out the small fibrous roots so they will lay straight. After this is accomplished, begin to fill in finely pulverized soil around the roots, being careful to keep out all stones. After a few inches of soil have been sifted in, pour on some water from a watering-pot, held at a sufficient height, so that the stream will pack the earth solidly around the roots, using a short stick to puncture the soil, so the water can penetrate. If this process is repeated until the

holes are filled up to the "collar" of the tree, they will live, as a rule. In addition to this care should be taken that manure does not come in contact with the roots. It is best to use old, well-pulverized compost well incorporated with the soil.

Selection of Varieties: — This is by no means a matter of secondary importance, but is to be taken into careful consideration in planting an orchard to supply fruit for the market. One of the great difficulties we have in New England orcharding is that we have too many varieties. If a grower has a carload of apples, and a buyer comes to purchase and finds that the crop is made up of four or five different varieties, he cannot afford to pay as good a price for them as he could if the packing was one straight variety, or, at most, had only two or three, because for the different varieties, he must look for nearly as many different classes of trade to which to dispose of them. And so we would advise, after providing the kinds wanted for home use, that only one or two varieties be planted for market. It makes less work in harvesting, less work in grading and packing, is more satisfactory to the buyer, and better prices can be realized. In selecting varieties, it is wisdom and good common sense to study the requirements of the market, and the adaptation of our soil and climate to any particular variety. Do not plant any varieties merely because they are quoted high in the market, for they may not do well in our section. For instance, the Newtown, or Albermarle Pippin is a high-priced apple, and has been quoted as high as $7 and $8 per barrel in the London market, but it is not the apple for us to plant, as the conditions of our soil and climate are not favorable for its full development, while along the Hudson river it grows to great perfection; and there are other kinds that do well in market, but they will not do well on our soil.

What shall we choose, then, for our orchards? I should say that the Baldwin stands preëminently first and foremost as the apple for us to plant. Varieties come and varieties go, but the Baldwin remains steadfast among them all. Any fame that New England fruit has acquired in the markets, has been gained by the Baldwin, and any success we may hope for in the future from our orchards, will probably be gained and maintained by the

carefully picked, well graded, and well packed Baldwin apple. We must build and maintain our reputation on that variety. There may be many of better flavor, and many larger and more showy, but they are not for us to raise. I would include the Greening also, only it does not seem of late years to be in good bearing condition with us. It will bud and blossom profusely in the spring and scarcely a barrel of apples on an entire tree when harvesting comes.

If fall fruit is desired, there is the Congress, Twenty Ounce, Nonesuch, etc., to select from. The Nonesuch is a profitable apple to raise, as it bears so profusely, and is in good demand, though there may be the objection to raising it on a large scale, that being sub-acid, it is suitable only for table use, or baking purposes, and requires a high grade for the best market, while the culls cannot be utilized for evaporating and other purposes, as can the acid varieties.

We will pass hastily over the processes of pruning and fertilizing, as we require the time for other considerations, only saying of the former, to keep the trees as low as is consistent with the ease and convenience of getting around among them. The work of harvesting can be performed with far less expense from a low tree than a high one, as nearly one-third of the fruit can be picked from the ground, or by use of a step-ladder, and the injury to fruit that falls from the tree is not so great. Of the latter we would say, "Feed the tree and the tree will feed you," but do not fertilize too heavily, as a tree cannot assimilate more than the amount that is required to sustain vigor and perfect its fruit. Make a study of the amount and kind of fertilizing material required by the orchard. As a rule, we prefer in actual practice, stable manure as the basis of fertilization, but as the elements entering into the composition of the apple are composed quite largely of potash, we would advise that the stable manure be supplemented by liberal applications of ashes, or other fertilizing material containing a large per cent of potash.

Spraying: — When the necessity for spraying first became apparent, it seemed as though the amount of labor involved, and the necessary expense incurred, would bring orcharding as an industry to an abrupt termination. But as our experiment stations

demonstrated that certain fungicides and insecticides would check the depredations of leaf blight and apple scab on the foliage and fruit, the conveniences for applying the remedies were brought to greater perfection; the orchardists renewed their courage and accepted the situation. It stands as a foregone conclusion today, that the orchardist who hopes to maintain the orchard in a thrifty, growing condition, and to make it a source of profit, must spray the trees, though it is hoped for the future, that a change of climatic conditions and a judicious system of fertilizing, ascertaining the right amount and kind of fertilizer to be used to maintain a tree at its best, will do much in process of time toward eradicating the present diseases to which the apple is subject. A well-fed and otherwise well-cared-for tree will more easily maintain itself against the prevalent diseases, than one that is neglected. It was observed in an orchard of Baldwins during the past season that had been well sprayed and afterward a liberal application of fertilizer made on one portion, that the portion fertilized showed a marked difference from the part that was not. While the spraying, of itself, was of great benefit to the entire orchard, yet the combination of spraying and judicious fertilizing on the part thus treated, was of still greater benefit, and the difference in the appearance of the two parts of the orchard was so decided, that it could be easily detected by even the unpracticed eye of the casual observer. The foliage was of more thrifty and luxuriant growth and retained its hold upon the trees, and its fresh green color, until the harvest was entirely completed in October, while the foliage on the other portion dropped prematurely. The fruit also on the fertilized portion showed larger size and a greater brilliancy of color. The orchard where this was observed has always had the best of care, and in view of these facts, there may be sufficient ground for us to experiment on the proper combination of spraying and fertilizing in order to secure best results.

The cost of spraying for an orchard in full bearing, including labor and cost of material, will not vary much from twenty to twenty-two cents per tree for three applications, which is ordinarily the number of applications necessary during the season. This estimate is based upon obtaining sulphate of copper for six cents per pound, lime for one cent, and Paris green for twenty cents.

As before intimated, the large growers are, as a rule, devoting time and attention to spraying, but it has been more difficult to arouse the small growers to a realization of the fact that the practice is highly beneficial and even necessary. But they are slowly awakening to the situation, and are realizing that present conditions require that their trees be sprayed.

It is a matter of regret that so much ignorance prevails among our farmers regarding the causes that make spraying necessary. The only thing that the majority of them know about it is that a few applications of Paris green will prevent injury to the fruit by insects. But this is not the only reason why we spray, nor is it altogether the most important.

One of the most important of the causes is the fungous disease known as apple scab and blight, which affects the foliage of the tree as well as the fruit, causing the black spots we so often see on our fruit, and covering sometimes nearly half the apple, making it in extreme cases entirely unfit for market in, even, No. 2 grade. Its effect on the foliage is that the roundish black or russet spots gradually extend in size until they sometimes cover the entire leaf, when it can be easily crumbled between the fingers. The foliage will begin dropping from the trees in July and through August, until in some cases the trees are entirely bare of all foliage by the middle or last of September. This disease and the consequent loss of foliage is a serious drawback to the health and vigor of our orchards, and will result disastrously unless the proper remedy is applied. I have conversed with many growers who were not acquainted with the nature of the disease, but whose trees were yearly showing the effects of its action upon them. The preventive to be used is what is known as the dilute Bordeaux mixture, composed of four pounds of sulphate of copper dissolved in a sufficient quantity of hot water to hold it in suspension, and four pounds of unslacked lime, well-strained, adding enough water, when thoroughly dissolved and mixed, to make forty-five gallons in all. It has been found by experiment that insecticides can be used with this formula without the injury to foliage that is sometimes caused by scorching, when used by itself, and after the first spraying, we add one-fourth pound of Paris green to the above mixture.

The Vermorel nozzle is generally conceded to be the best of any with which to apply this mixture, as it makes a very fine misty spray that is quite penetrating, reaching all parts of foliage and fruit, and will not clog up by the particles of lime that are in the mixture.

Harvesting, Grading, and Packing for Market: — These are the last processes to be considered, but are by no means of least importance. All the other processes depend upon these to attain best results and highest success. These processes should have, and must have in the future more of our care and attention, if we hope to retain the favorable disposition of the market now being manifested toward us.

Where the fruit is produced is the best place possible to put it in proper shape for the market, and we need to study the best ways of packing and grading, and reap the rewards and profits by doing this work in the best possible manner ourselves, instead of letting our crops go into the hands of one who stands between us and the wholesale dealer in the market, or else depend upon the dealer in the market to send an experienced packer to see that our fruit is properly graded and packed. This has been a popular way with many, but it is all a mistake. There is no gain in it, but much loss. It has often been said to me by those who had sold their crop, that the buyer would send a man to see to the packing, considering that their responsibility in the transaction, aside from making delivery, was at an end. It is very true that the buyer assumes the responsibility for proper grading and packing, but we pay for it.

The buyer gains well selected goods to place upon the market, and we lose the profit that might be gained by properly grading and packing the apples ourselves. The usual prices paid by dealers to experienced packers is from twelve and one-half to fifteen cents per barrel and with this there are incidental expenses incurred by the dealer in sending out packers, that easily bring the cost up to from twenty to twenty-five cents, depending upon the size of the lots to be packed and their distance apart. All this expense comes directly out of the producer, who thinks he has so happily escaped the responsibility of seeing that his product is in proper shape to place upon the market, for the buyer

will every time pay us enough less for our crop to cover this expense.

The buyers do not want to do this work for us. They would much prefer to pay us a higher price for our product, if they could be assured the work would be done properly, than to do it themselves, but the necessity for some sort of protection has been forced upon them by the carelessness, ignorance, and neglect, that is constantly being shown in our packing.

Our New England packing has been a term of reproach, and a byword in the markets, and will continue to be until we learn to put up an honest barrel of apples; to pack a barrel that will be No. 1, or No. 2, according to grade from top to bottom. It is enough to shake one's faith in the integrity of human nature, to go into the markets and see the apples offered for sale that come largely from the New England states. It is an old and somewhat worn saying about packages that show good fruit at the ends, while the middle is filled with bruised and wormy fruit, but it is none the less true, and until we can correct the tendency to work in fruit that is below grade in the No. 1, and of no grade in the No. 2, we must be reconciled to the just suspicion that now attaches to our packing. We might take the lead in the markets for the general excellence of our product, if we would only use proper care in grading and packing, and we must improve greatly in this respect if we hope for continued success, as we are brought into direct competition with the acknowledged excellence of York State and Michigan grading.

A heavy dealer in one of our largest markets told me recently that the demand for well selected New England packages was practically unlimited in that market and 20,000 barrels would not be a too large quantity for his firm to handle at top prices if properly packed, and this is true in all our markets. We can, by careful grading, command the best prices and best markets.

In order to secure best results in preparing the fruit for market, we must exercise care and forethought at the beginning of harvest. When entering the orchard to begin picking, first gather up all the apples that have fallen from the trees, and keep them by themselves. Never, under any circumstances, allow them to be mixed with the picked fruit. In picking it is best to

first secure what can be reached from the ground where the trees are low, as it will prevent many being knocked off when using the ladders. For convenience of work, the ladder should be provided with an arm or extension that will allow it to reach, by placing the arm in the crotch of a small limb, where it would not otherwise. Avoid all shaking from the tree unless absolutely necessary, and instruct the pickers that they must exercise great care in handling the fruit. Impress this upon them first, last, and all the time. When a tree is being picked, have a man on the ground to gather up all the fruit that falls and keep that by itself. Do not mix it with the picked fruit as it is difficult to get better than second grade from dropped fruit. To secure best keeping conditions, care should be taken not to place heated apples in a barrel immediately after gathering. There are many days during the picking season when the sun shines quite hot upon the fruit, and if placed in the barrel in the heated conditions they are in, they will continue to heat, and decay will result. When the fruit is in this heated condition, it should be placed in the shade on the ground, and left until toward nightfall to cool off, when it can be placed in the barrel with safety.

The outward appearance of the barrels we use to pack in is another item to be taken into consideration, as well as their fitness inside for the use they are designed for. Not enough care generally is exercised in the selection and preparation of packages for packing apples. The first appearance of a package has much to do with its market value, and the buyer takes this into consideration. Do not purchase old-appearing and unclean barrels because they can be bought for a small outlay — you will pay full price and more, too, when offered for sale. Secure good, sound barrels and have them as uniform in appearance as possible. Round hoops are to be preferred to flat, as they are distinctively a New England package. In preparing the barrels for the fruit, first see that all nails on the inside are driven down, so there will be no danger from them of injury to the fruit. In cleaning the barrel first brush out the greater part of flour or other substance that was in the barrel, using a sharp-pointed iron to clean out the chime groove at the bottom of the barrel, which will be the top and "face" end of the package when opened in

market. Rinse out the barrel with water to lay the fine flour dust, after which the barrel is in readiness to receive the fruit.

In grading, a fair apple two and one-fourth inches in diameter constitutes a No. 1 of Baldwin, or other medium-sized variety, though too small for No. 1 of King, or other large-growing variety. Anything smaller than two and one-fourth inches, however fair and perfect, should run into second grade. Use great care in keeping inferior and bruised fruit out of first grade. It is a mistaken idea that the good fruit will help to sell the poor and inferior specimens that may be found in the same package. The poor fruit will injure and detract from the value of the good in every instance.

In grading for No. 2's, care should be taken to keep out such as have no market value. If an apple is quite small in size, but fair, it will pass, but if small and wormy, it should pass into no grade and be rejected. In filling the barrel first place a paper, fitted for the purpose, on the bottom to prevent the fruit on the end from coming in contact with the wood, or any particles of flour that may adhere to it.

In "facing," it is best usually to "double face," as the requirements of the market are demanding that, and it is certain that the packages present a much better appearance when opened. Have one to inspect the fruit as it is run into the barrel, that any inferior fruit that may have accidentally gotten into the sorting baskets may be detected.

Be sure that the fruit is well settled in the barrel by a gentle shake with every half-bushel that is filled in. When this is accomplished and the barrel well-headed and coopered, it is ready for market.

In order to insure good packing that will not show "slack" packages, it is best to let the fruit stand two weeks after picking, and go through the sweat, after which, with proper care in filling and heading, the packages can stand an entire winter in suitable storage without showing any slack, but if packed before sweating, they will almost invariably show slackness in a short time.

We have endeavored thus far to outline and bring in hasty review the natural adaptation of our New England hills for apple culture, and the treatment of trees and fruit that is necessary to

make us successful in it, and unless we are disposed to take the course that will make us successful, it is better for us to not engage in it, as the demands of dealer and consumer are for the best, best in quality and flavor, and best in care of handling and workmanship, for which they are ready and willing to pay us best prices. But if we are disposed to use the necessary care and diligence required to make us successful, there is a prosperous future before us in high-grade apple culture.

But in engaging in orcharding we must recognize the fact that conditions of industry have changed within the past twenty or twenty-five years, and we must fit and prepare ourselves to meet the change. We find this change all about us. It is not confined to any particular industry, but enters into all. If we inquire of the manufacturer or mechanic what these changed conditions require of them if they are to be successful in their business, the answer would be that they are obliged to produce a greater quantity and better quality of work in a given time than formerly; that in order to attain the highest success they are obliged to make use of the best improved machinery and working tools, that they may be enabled to fill orders promptly, and to supply the trade with goods of uniform quality and excellence of material.

If we inquire of the merchant what effect the changed conditions have upon his business, he will tell us that, in order to attain the highest success, he must carry a larger stock of goods, and of greater variety than formerly; that he must make a study of the requirements of his customers, and be prepared to supply their needs before they themselves, perhaps, are aware that such need exists. If we pursue our inquiries and carry them into the lines of professional activity, the professional men will tell us that there has been an advance all along the line; that, owing to the increase of general intelligence, and the advancing lines of professional research, they must study harder and work harder, in order to keep abreast of the times and maintain their positions. They will tell us that the average professional man of forty, thirty, or even twenty-five years ago would be out of date today, and he would be. Look at the immense strides of improvement that have been made within the recollection of men of fifty years of age, and even younger, in manufacturing appliances. Consider

also what scientific investigation and application have done for us, giving us the trolley and cable cars for convenient transit, and the telephone for rapid communication. We will also take for convenience of illustration in professional lines, the practice of surgery at the present day. It almost seems, as we read from time to time, accounts of difficult surgical operations that are performed in our great hospitals, that they could take a man apart and put him together again, and he be the gainer by the operation. The average surgeon and other professional men of fifty years ago, as well as mechanics and those engaged in mercantile pursuits, would be out of place now, and we would have but small use for them. Their acquirements would not be sufficient for our needs; they were sufficient to meet the necessities of their age and generation, and without doubt filled their places in life nobly and well. But conditions have changed, and we of the present day will find in all industries, that the one who does not study the requirements of his particular calling, will be left sadly in the rear.

If we search for the causes that have brought about this change of conditions we will find competition to be the primal cause. Competition has been a mighty power in shaping the industrial conditions of the present day; it has exerted and will continue to exert a wide influence in maintaining those conditions. It is not our purpose to enter into a discussion of the relative rights or wrongs of competition, but merely to recognize the fact of its being an element that enters into our industrial condition. But there are others, also. As an outgrowth of this primal cause, we have two others that must be taken into consideration, as elements in present industrial conditions, namely, — extension and intensive application. Competition demands quantity, it also demands quality; on the one hand a larger output, on the other, a higher grade of product.

These, then, are our present-day industrial conditions, and the question for us is, How are we to meet and apply these conditions to successful New England orcharding? By successful, I do not mean merely successful as an individual (although that, of course, is the basis), but successful in its broad and inclusive sense. We mean the apple-growing towns in the apple-growing districts of all New England; we want to be successful in

orcharding as a recognized section of our country, and not merely as a town, a county, or a state.

But how shall we do it? Well, I will tell you, my friends, just what we lack in order to accomplish it. Success would be ours, only one factor, and that a very important one, is wanting. We have already remarked upon our suitable soil, our favorable location and climate, also the profitable markets that may be ours, but all this is useless to us without the man. What we want in order to reach the highest success is the man, and the body of men up and down these hills of New England to work into orcharding as a business, and when we will engage in it as a business, and conduct it as a business, and not as a pastime, or catch-penny, our success as the largest and best apple producing belt of our country is assured. When we do this, we will comply with that minor industrial condition, — "extension." What we want in orcharding today, are men who will put into it the extensive effort necessary to broaden it, and the "intensive application" necessary to develop and raise our product up to a higher standard. Extension without intensive development is ruinous and meets the condition of competition on only one side. Too much of that kind of competition prevails with us already. What we want are men who have a comprehensive view of the situation and its requirements, men who have the purpose of success in view, and who are willing to begin in a small way, if necessary, but whose effort will be to extend the industry and perfect themselves in it. But in order to attain complete success in the shortest time it is important to make use of the knowledge of others to supplement individual effort. Individual, unaided effort is a long and hard road to travel, and the orchardist needs to recognize that the conditions of success require that he equip himself with all the practical information possible, and to this end it is quite essential that a more extended use be made of the observations and investigations of educated, professional agriculturists. I hope the day has gone by, never to return, when the rank and file of our farmers will speak in derision of "book" farming. I fear the majority of our New England farmers followed on that line too long for their own interest, and the appearance of our New England hill-town holdings would

indicate that we needed more "book" farming, and not less. This is especially true of orcharding. All the information that can be gathered from horticultural works is required, and all the observation and investigation of skilled specialists added to our own experience will be found necessary to insure success.

Our state experiment stations, with their educated specialists, are invaluable to us, and we need to give their reports more of our attention in these days when the progress of orcharding as an extended industry seems so hedged about with difficulties to the uninformed. Ofttimes the investigations of the station clear the way of obstacles for extended and practical effort with our orchards, which would have been a serious hindrance, if not an actual barrier to us, if left to our own unaided efforts. So, then, what we require is not "book" farming alone, nor do we want to rely upon our experiment stations altogether, but to place a high and appreciative value upon each, and to combine them in such a way with our own knowledge and observation, as practical producers, that best results may be obtained. This, then, is what we mean by "intensive" application: to so apply ourselves to the requirments of our business as orchardists, that we will make use of all means at our disposal to place that business on a paying basis.

We must engage in orcharding for the "money there is in it" as well as for any pleasure that may be derived from it, and in order to do so, we want the men for the occasion, as has been already indicated. But some may say, "My orchard don't pay me." That may be very true. I am quite inclined to think it is true with many of our orchards. But whose fault is it that it does not pay: yours or the orchard's? What have you ever done to make it pay? How much fertilizing have you ever done? When you have taken a crop off, what have you returned to the soil for it? How about the pruning, and general care of the trees? and their fruit itself? — How was it gathered, graded, and packed? Did you have sufficient grace to perform the important process of grading in the best possible manner, so as to secure best market prices when brought into competition with other fruit in the market? It requires considerable of the quality of grace in a man in grading, when an apple will almost, but not quite go in first grade,

to place it in the second, and when it will almost go in the second to place it in non-grade, and reject it. Yet this is just what is required, this, and a thoroughness as to detail in all the processes that go to make up successful orcharding, together with a live interest regarding best methods is intensive application and development in its complete sense. With it the orchardist is fully equipped for his business, but without it, success will be but a dream that will never be realized, and I would ask those who say they cannot make orcharding pay,—"Are you the right man in the right place?" "Have you placed yourself in line with present-day requirements, and given your orchards a fair chance to show whether they will pay or not? and, until you do, is it quite fair to jump to the conclusion that apple growing as a business is a failure?

One great trouble with our orcharding seems to be that we regard it too much as a side issue, and do not place it on the same basis of "you *must* pay or go by the board," that we do other farm crops. Too many are disposed to regard the orchard merely as an adjunct to the farm that will take care of itself. If it yields anything, well and good, but if not, we will look to other crops for our income. Now, there is not a farm crop grown, nor any farming industry engaged in, that can be made to pay when conducted on that principal. Too many of the farmers in our New England towns are conducting their operations on that line, they are not living on their farms in the true and broad sense of living; they are simply existing there; they are not developing their farms or themselves. If you will allow this divergence from our subject, I will ask if you do not recollect how much was said a few years since about abandoned farms in New England? What was the cause of the farms being abandoned? Would they not support the occupants, if properly managed? That may have been sufficient reason in some woe-begone location but in the majority of cases, we say, no, that was not the reason, but the trouble was the man weakened. He had not prepared himself to meet changed industrial conditions in any branch of production, and had not fitted himself in any way to keep up with the line of progress, so was forced to surrender. Yet those farms are capable of improvement, and embrace some of the best locations for apple culture that the country affords.

But to return to our subject and summarize our remarks. We have endeavored to show that the apple may be made a staple money crop of New England, for the reason that her soil and climate are adapted to its growth. We have the natural home of the apple with us; we can produce fruit of superior flavor and keeping quality; we have also found that the markets are giving our well-grown, carefully harvested, and well selected and packed winter fruit, the preference over any section of our country, and are glad to pay us a premium for it. Now, does it not seem in view of these facts, that the rough and hilly portions of our New England states could be profitably devoted to apple culture? It certainly has that appearance. All that would seem to be required is, for the owners of the soil to awaken to the magnitude of the natural advantages for orcharding they enjoy, and prepare themselves in the ways that have been indicated, to enjoy the benefits and reap the sure rewards that may be theirs, only bearing in mind that in orcharding, as in all other undertakings, "Eternal vigilance is the condition and price of success." I wish I could send my voice up and down to all the farmers in the hilly portions of the New England states to plant apple orchards. We never need fear any permanent over-production. To be sure, we have occasional years of great plenty, and years of scarcity, with a consequent fluctuation in market values; but notwithstanding that I still say, plant orchards and take care of them, and you will reap an abundant reward. I can think of scarcely a farm product but what is subject to the same fluctuation of values as is the apple, so the argument need not weigh with us, and my closing remark will be, that with the right man in the right place, to engage in orcharding, making use of the right methods, the New England states can be made one of the most beautiful and prosperous, and one of the most desirable sections in which to live, that could be found in the entire country. We would hear no more about our "bleak and barren" hillsides, and we could in a few years' time, command the attention and admiration of the entire country, and of all apple-consuming people, in whatever place, for the quantity and superior quality of the New England product.

Discussion.

President Hadwen. After having listened to such an eminently practical talk on the culture of the apple, opportunity is now offered for a further discussion of the subject.

P. Sayward. I would like to ask if the lecturer would limit the selection of commercial varieties to the Baldwin and Greening?

Mr. Richards. The Baldwin will be the apple for us in New England to raise. The Greening buds and blossoms profusely but does not produce fruit heavily.

The Ben Davis apple while popular in other sections of the country is not to be recommended for New England. The time is not far distant when this much overrated apple will be discarded.

Thomas Harrison. I understand the lecturer to recommend that trees be planted so that the collar of the tree is just at the level of the ground. My experience shows that trees should be pruned in pyramidal form and I have trees that bear twelve to fifteen barrels of apples in a bearing season. The difficulty of planting on a hillside is that at some seasons of the year, by the settling of the earth, the trees become imbedded in water.

Mr. Richards. Provision should be made for drainage. I recommend trimming trees low so that the fruit can be gathered more easily and safely and thus avoid damage from bruising.

Varnum Frost. I would like to ask the lecturer what should be the make-up of the soil in order to obtain good fruit? I know that not all the hills of New England are profitable for tree planting and it requires just as much labor to take care of trees as vegetables. I have had much experience in orcharding and in my opinion it does not pay.

Mr. Richards. It is true there are difficulties in the way and it will take a long time to gain wealth in the business; but after your orchard is established in producing condition, you are going to have a steady income from it for many years.

The soil in the western part of the state is rocky and gravelly and is well adapted for apple growing, but east of Worcester I

would not recommend orcharding. Some of the best orchard grounds in New England are in western Massachusetts. Do not go on to clayey ground for an orchard.

Mr. Harrison. I remember that Mr. Gregory once told me that he had never seen a good Russet apple except in clay soil.

Mr. Richards. The Russet apple does very well in clay soil.

Mr. Frost. According to my observation the best apples grew where there was clay in the soil, so near the surface, that the plow turned it up. They had better color and better keeping quality than those grown elsewhere. Nature shows plainly, by the growth of vegetation, the fertility of the soil, as is evident in the comparison of sandy with clayey ground. You see good buildings where you see good land. A large part of New England is not good for anything.

Joseph H. Woodford. The essayist has given us some good ideas regarding the growing of fruit. The Baldwin is undoubtedly the best apple to grow in this section for commercial purposes. I note that two million barrels of apples were shipped from New England ports the past year and it is an incentive to those growing orchards. Some years ago I was in Bombay when a ship arrived with four hundred barrels of apples. They came in good order and sold readily for twelve and one-half dollars a barrel. After one's taste had become tired of tropical fruits, I thought those Baldwin apples the best fruit I had ever tasted.

I have had some trouble with my apples lately, and they do not appear to be keeping as well as formerly. I put one hundred bushels in the cellar last fall and they are badly affected with a fungus. I have noticed that none of it appeared when the apples were first put in, but developed on the fruit after it had been some time in storage.

Michael Sullivan. I have listened with great interest to the lecture of today and I take the same ground as the lecturer regarding the growing of apples in New England. New England has the climate and all the conditions for success in fruit growing, and the time is already at hand when New England will be for the apple what California is for the orange. In Revere where my farm is located the soil is a clay soil and I took two prizes for Baldwin apples at the last exhibition of the Society.

Benjamin P. Ware. I have listened attentively and with great satisfaction to the lecture of this morning. To illustrate somewhat one point which the lecturer has made, I will say that some years ago I was called upon to lecture in the western part of the state. There was a good deal of discontent at that time with the prospects of the farming interests, and they asked me what could be done to improve the condition of things. I told them that their town was well adapted for apple growing and advised them to go to work and set out orchards. One of these farmers met me not long since and said that his town was indebted to me for the suggestions I had made. They had followed my advice and planted fruit trees and thereby had improved very much the condition of things.

Some, we are told, have cut down their orchards, but those men are not the right men in the right place. Young men can do no better than to set out orchards, for I believe in the future of the apple, especially of New England apples.

The Ben Davis is going out of date and, although it is good to the eye, there are some people who regard flavor as desirable.

E. W. Wood. We are indebted to the speaker for some valuable suggestions for growing orchards. For commercial purposes the Baldwin still holds preëminence in this section and is the best seller in the wholesale market.

We have plenty of cheap land within twenty-five miles of Boston capable of producing good apples, and I can recommend no better business for a young man who seeks to get a living out of the soil. In New England trees twenty-five years old are just in their prime, but in the West, at that age, they have passed their prime.

Mr. Frost. I cannot agree with you.

W. H. Sayward. I am not an agriculturist and know nothing about farming, but I am surprised to hear such differences of opinion on the subject. If this were a convention of doctors or lawyers I would, of course, expect to hear such diverse ideas expressed, but coming from a class of men whom I have been taught to regard as the bulwark of the country, it is indeed surprising. I am also surprised to be informed that the land in the eastern part of the state is not suitable for orchards, but am

glad to hear from Mr. Wood that apples can be grown east of Worcester. New England is, indeed, the favored land for the apple, and no apple can be grown in California to compare with ours.

President Hadwen. I have listened with pleasure to this, the most practical paper I have ever heard on the subject of apple growing. Sixty years ago I planted the seeds from which my orchard is growing, budded the seedlings and cared for them, and it is still a profitable crop. I think the apple is the finest fruit nature has ever given to man. My friend extols the Baldwin, but none have been used in my house for twenty-five years. Why? Because we know of better ones, and in my home we want the best. I say nothing against the Baldwin; it is the apple for the million, and is entitled to respect for it originated in Massachusetts. Some of the best apples known in apple culture originated in New England.

Jacob W. Manning showed photographs of the monument in Wilmington, erected to commemorate the first Baldwin apple tree, and also a picture of Peter M. Gideon who originated the Wealthy apple.

MEETING FOR LECTURE AND DISCUSSION.

Saturday, February 28, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President Hadwen presided and the following lecture was delivered:

The Demands on Agriculture in the Present Century: How Shall we Meet Them?

By Hon. J. W. Stockwell, Boston.

We have glimpses that are revelations, indications that are assurances, giving to us an eminence from which we can scan the future's progress in agriculture, and with somewhat of

certainty prophesy its results. And yet I wonder how this paper would read one-half century from now when the progress shall have so far outrun the anticipation that this view will be looked upon with a pitying smile at the lack of vision, the undervaluing of the great advance now rushing upon us in science, law and adaptability of nature's forces. The agriculture of the twentieth century is a problem beyond the scope of the thought of today, beyond the ken of the keenest imagination. Looking back a half century what wonderful progress. I can look back fifty years and see the old fireplace with its backlog and forestick, the large family that "round the ingle formed a circle wide." The Sunday nights with the apples and cider, the quaint old tunes and the prayer followed by blessed sleep preparing for the week of toil. I remember the wooden moldboard plow that I have chosen to use in the field; the hand rake with the lighter boys in the lead, the elder ones following as the windrow grew. Small pity for the little shaver's heels with the anxious farmer behind and a shower in the west, dark and ominous. It was on just such a day and just these circumstances that a neighbor drove into the field of four acres of grass, laid low by the swing of the scythe, and put in the revolving horserake and saved the hay from the shower that was coming upon us. Who thought of a mowing machine then? Many of you remember its coming, so recent its date. Looking in a late number of one of the magazines you see a picture of twenty-one self-binding reapers doing the work of an army of men on land one-fourth century ago a wilderness, now a part of a three thousand acre farm. A single illustration of the advance that has been made in the last half century, and that must go forward into and through the twentieth century to care for the coming needs, and the natural advance and increase that must be provided for.

There is to be no sudden revolution in means or methods. How quietly has the wonderful advance of the last half century come about! The old methods pushed out, the new coming in with no break, no jar, no strained effort, but as silently, as quietly as the morning light awakes the new day, has its progress been. And yet in review the advance seems a marvel even to us who have lived in it and been a part of it. Just so is to be the future

of this century. But the change must be immense as we project our vision to the close of the century and estimate its necessities.

Let us not underestimate the importance of our calling. The prosperity of the twentieth century must depend on the productive industries; and first in importance are the products of the farm, the products of the soil. For the last decade eighty per cent of all our exports have been agricultural and the exports of the nation represent the wealth of the nation. This ratio of export may not continue. What it shall be rests with the farmer of the twentieth century. We have now a population of seventy-six millions plus. In 1940 we should have one hundred and fifty millions, and, making all allowances, the year 2000 will in all probability see three hundred millions of people to be fed in these United States. If the rest of the world increases in a similar ratio, and the ratio is below anything in the past, it becomes a serious question what shall we eat and drink and wherewithal shall we be clothed. My first proposition is that the soil is sufficient to meet the demand. We are not going to crowd one another off the planet in this century for want of sustenance. But that agriculture may take up the work, keeping step with the necessity, we need to consider some things very carefully. What is the condition of agriculture today? All the world over it is bearing burdens, undue burdens. In our country less than in many others, but these we are not able to bear. I name them and leave them; unequal taxation and therefore unjust taxation; trusts, making extortionate demands of the farmer in goods brought, and placing prices on his products; freights beyond the necessity of remunerative transportation; the price of labor, by these extortions carried above the possibility of profitable return from the farmers' crops; are some of the economic problems that must be met on the very threshold of this century, and the American farmers, realizing these conditions will "dare maintain" their rights. Agriculture is interested in the prosperity of all other industries; much more are all other industries interested in and dependent upon agriculture. The present improved condition and the bright and hopeful outlook at this beginning of the new century is a matter of congratulation in the marts of finance and trade as in the farmers' homes.

Then we need to realize the dignity of our calling; we need to promote these experiments which our state and country are working out, and to realize the necessity of the work they are doing for this country; to encourage each and all who till the soil to do the best work and to find in it the added profit; to inspire in the farmer the desire to excel; to cultivate the love of nature; to realize the grandeur and joy of working together with God, seeking out the subtleties of plant life and multiplying and increasing His gifts for the sustenance of man. In the century on which we have just entered we shall go forward, just as we have done, improvement marking our steps, and the end of the century will find the farmer dignified by his calling and nature's stores not even then half revealed in its ability to feed the world.

The first element to a country's advance is its people. The wealth of a nation is found primarily in its people, not the few, the favored, but the many; they produce it, they multiply it. The wealth of this country has increased fourfold in a quarter of a century. What has produced this wealth? Its natural resources are a factor. Every emigrant coming to these shores is a source of wealth, hands to work and a mouth to be fed, and these mouths give value to the wheat field in the West and the products of the farm in the East. In these homes is the market for the coal from the mine, the products of the soil, and the finished work of the loom. They enhance the value of the railway and the railroad. It is the products of the farm that determine the value of the great railroads that traverse the country to the seaboard, and the stock goes up or down with the prosperity of the farmers of the West, and the reflex prosperity of the productive industries of the East, and it is the great army of workers who are the producers of this wealth, because they are the great bulk of the consumers of the country, and crops without markets may be burned. Good crops, however necessary, if the people who consume them have not the purchasing power, may rot or waste, and the mills stand idle. Therefore whatever affects the laboring classes unfavorably affects the prosperity of the country, and hard conditions in any line are a menace to the welfare of the state.

"Ill fares the land, to hastening ills a prey,
Where wealth accumulates and men decay;
Princes and lords may flourish or may fade,
A breath can make them as a breath has made,
But a bold peasantry, their country's pride,
When once destroyed can never be supplied."

And one step farther. We are proud of our state, its wealth, its resources, its productions. In columns of finance it ranks high, and yet these all must subserve one thing to be truly rich and prosperous, and that is the conditions that produce strong, noble men and noble women, fully equipped to noblest purposes and to grandest aims, and the nearer to nature the child is reared the purer the instincts and the more healthy the development on all lines. The nearer the child to nature the better, the stronger, the man. We too can sing "For the strength of the hills we bless thee our God, our Father's God." There is not a city in these states that is not richly endowed by the strength of country life infusing its every avenue.

God gave us the country and the love of country and the love of nature. The garden is the symbol of all that is best and sweetest from the day of creation to the present moment. The Garden is hallowed by the life of our Lord. Bright and happy, sad and bitter experiences, all found zest, solace and strength there. The hills were His teachers, the wheat was a lesson, the birds were companions and He cared for them. When we take His created things, so dear to the Divine heart, and multiply them as the wheat, beautify them as the lily and the rose, create new varieties, new bounty, new beauty, we are walking so near to God that the very thought of His joy in our work must lift us to higher altitudes and more joyous life. Life is lifted by its surroundings and nature is made so delightful, so beautiful and so improvable, as a ministry, elevating, ennobling, and refining. Therefore must this communion with nature ennoble man, uplift and deify character, so long as the world shall endure.

And second, the element of education or greater knowledge must come to our aid. We talk of nature studies and this is well. Electricity is but a study of nature's forces and we are yet in the primary class in its wonderful uses. Chemistry has done much

for us and yet science's laboratory is so clumsy when compared with the alchemy of nature's crucible. In our chemistry there are mistakes, there are undiscovered potencies, in nature's there has been no change, only greater development and grander results. How wonderful the choice, yes, let us call it the intelligence, hidden in the ground. What teaches the tree to select the soil food that shall produce the leaf, the blossom, and the fruit in their season? Take a bit of earth in your hand, pulverize it, sterilize it if you please, then plant in it three little germs of life, and from that soil will come forth the grain for food, the flower with its fragrance, and the plant with poison in its touch or taste. Who taught these different rootlets to select, collect and diffuse in plant growth such different elements? There is yet much before us to be learned ere we give up nature study or solve the chemistry of plant growth.

"Flower in the crannied wall,
I pluck you out of the crannies; —
Hold you here root and all, in my hand,
Little flower — but if I could understand
What you are, root and all, and all in all,
I should know what God and man is."

Said Dr. Pritchett at the meeting of the Board of Agriculture, at Worcester, in 1901, — "The last quarter century has brought into our possession not only a new series of facts, but what may be called new methods. It is generally called the scientific method. This is nothing other than to get possession of the facts and to apply them in accordance with common sense .... manufactures, mining, all industrial arts, avail themselves freely of the results of modern science. The farmer must do the same thing if he is to keep pace with the developments in manufactures, in mining, and in the other directions. A whole series of facts relating to the soil, the climate, to the life of plants, of insects, to the rotation of crops, are available for his use. The applications of chemistry, of botany, of geology and zoology, bear directly on his work. The twentieth century farmer must use his head as well as his hands if he is to keep step with progress."

The advance of agriculture in the last few years has been grandly suggestive of its future improvement and ability to meet

all demands of the century's growth in population and needs, both domestic and foreign; and yet the storehouse of nature has but half opened its doors to the agriculturist of today. He has simply glimpses of the possibilities of the future, under improved methods and increased knowledge, thanks to the State Board of Agriculture, its societies and its institutes, which to a large degree have led in the advance of agriculture, not only in this state but also in other states in this country. The horticultural societies, their institutes, the meeting together of the advanced agriculturists of a city, county, or state, is of wonderful benefit, inducing friendly rivalry for the best, the newest, the rarest, that nature can produce. The benefit of your meetings and your exhibitions is not a thing that blooms out into fruition in a day; but it is one of the influences that shall enlarge, perfect, beautify and bless the present century. It is well we sometimes take the retrospect glance to give courage to continue the good work, assured that the work is advancing, and that we are in the line of future results, more wonderful than any already achieved.

We are just beginning to appreciate and understand the great agricultural possibilities of America, especially of our country in America. Our inheritance in richness of land is an immense bequest not yet developed, not fully appreciated or recognized. Said Emerson: "Let us realize that this country, the last found, is the great charity of God to the human race." Said President Schurman of Cornell: "This continental heritage of ours is rich in corn and wheat and oats, and cotton and rice and sugar and tobacco, in herds and flocks, and all manner of dairy products, in oil and coal and iron, every precious metal. Our country represents the supreme effort of Providence to build and equip a self-contained home for the human family."

The U. S. Department of Agriculture is doing a great work in a single line for agriculture, in demonstrating the capabilities of this country to supply all its needs, on its own soil, from the fruits of the tropics to the productions of our colder climates. We, the farmers of Massachusetts, are doing a good work in demonstrating the utility of growing the fruits of summer at greater profit in the winter by greenhouse culture, within our own borders, thus giving our people these products, fresh, healthful,

and palatable. This is not an experiment, it is demonstrated fact; and the enlargement in these lines will be wonderful in the early years of the present century. This is not peculiar to our state and nation, but is part of the forward movement in the world's agriculture. Many of our farmers have specialties in summer culture, and the greenhouse culture comes in to give pleasant and profitable employment in the colder season. Not only lettuce, radishes, tomatoes, and cucumbers are now quite extensively grown, but the list is being enlarged yearly, and tobacco shading, and greenhouse culture will soon be a large industry in Massachusetts.

Going along with this enterprise our experiment station has sterilized the soil in experiment plots to destroy injurious bacteria, and this method has been tried by some of the market-gardeners near this city with good results. Once sterilized, with care, the soil is free from injurious germs for a period of years. This discovery has been made very practical by Prof. Stone of the Agricultural College. It revolutionizes greenhouse culture, it takes away the element of uncertainty, and increases the product marvelously, an illustration of which I shall give later.

I make no apology for taking the statistics bearing on this subject from a lecture by Prof. Waugh of our Agricultural College, delivered before the Board of Agriculture at North Adams, and to be found in our forthcoming report.

"Looked at in any light the figures of the last census indicate a specific change in agricultural conditions. The change is in the direction of the investment of more outside capital; and this means, in agriculture as in every other industry, that an economic advance is being made.

Improved and Unimproved Farm Lands.

Another matter which will be interesting to notice in this connection is the disproportionate increase of unimproved farm land. Expressed in percentages of the total area of farm land, the figures for the United States are as follows:

1880,	53.1 per cent improved.
1890,	57.4 per cent improved.
1900,	49.3 per cent improved.

The falling off of 8 per cent in the last decade is especially remarkable. In the State of Massachusetts the figures are still more striking. They follow herewith:

1880,	63.4.
1890,	55.3.
1900,	41.1.

'Only 41.1 per cent of the land in Massachusetts improved today.'

In the case of Massachusetts there has been an absolute, as well as a proportionate decrease, as is shown by the following figures:

1880,	2,128,311 acres improved farm land.
1890,	1,657,024 acres improved farm land.
1900,	1,292,132 acres improved farm land.

Without going any further, it might be assumed that this decreased acreage of cultivated land indicates a more intensive cultivation of the remaining acres. This possibility deepens into certainty when we study the

Value of Farm Products.

The total values of farm products (reckoned for the year preceding the census year) for the United States and Massachusetts, for three particular years are shown herewith;

	United States.	Massachusetts.
1880,	$2,212,540,927	$24,160,881
1890,	2,460,107,454	28,072,500
1900,	4,739,118,752	42,298,274

Even at a glance the increase in the value of farm products is surprising. When examined in comparison with the figures given a moment ago, this increase is truly remarkable. Thus, while the absolute acreage of improved farm land in the United States has increased fifteen per cent during the last decade, the annual value of farm products has increased ninety-two per cent. That

is the record for the United States at large. In the Commonwealth of Massachusetts, with twenty-two per cent *less* land under cultivation, the annual value of farm products has been *increased* fifty-one per cent. That looks like an improvement in agriculture, does it not? I doubt if any other industry in the world can show a similar advance.

These figures show, furthermore, that while there may be some tendency in certain sections of the United States toward the development of agriculture along lines of more extensive farming, the great forward movement of the time is most emphatically in the direction of intensive farming.

The Ratio of Productiveness.

The efficiency of intensive agriculture may be shown on another side by another draft on statistics from the twelfth census. It has been necessary to compute the following figures from data given in the census report, and, since averages are used in the computations, the results may not be accurate to a cent. The general principle is so emphatically brought out, however, that the difference of a few cents here or there is not material. The following table shows the rate of gross income to each acre of farm land, for farms of different sizes. The figures are for the entire United States.

Area of Farms.	Income per acre.
500 to 1,000 acres,	$2 55
260 to 499 acres,	3 56
175 to 259 acres,	4 85
100 to 174 acres,	5 26
50 to 99 acres,	6 71
20 to 49 acres,	9 26
10 to 19 acres,	15 73
3 to 9 acres,	33 83
Under 3 acres,	296 00

The rapid and regular increase in productiveness as the farms grow smaller is too striking to be disregarded or denied. We

should easily be justified in founding upon such data the law of productivity, which might be formulated as follows: the productivity of farm land is inversely proportional to the size of the farm. It may be seen that this law is almost mathematically and exactly correct, according to the foregoing figures."

A few illustrations of new and intensive culture which must mark the century and I close. The first is wheat. Since the beginning of the last century the French peasants have nearly doubled both the area under wheat and the returns from each acre, increasing the product very largely. Forty years ago the crop was good when it yielded twenty-two bushels, today it is thirty-five and the heavier yields reach up to forty and forty-five bushels. There are whole countries, Hesse, for example, where the average crop attains thirty-seven bushels and experimental farms largely increase this amount. Apply this culture and result to our great wheat raising country, with an average yield of twelve and one-half bushels per acre, and increase it to forty and guess the immense product of our country's wheat fields. The present methods and results are the economy of today; to meet the future demand will be the economy of tomorrow. I do not at this writing find the figures, nor can I give you the authority, but am sure of the fact that in Georgia the prize given for the best yield of wheat was awarded to sixteen acres yielding forty-four bushels per acre, or more than seven hundred bushels for the field. Georgia soil is not comparable with the West for wheat raising, and this result is only a hint of the possibilities of wheat raising in this country. The census figures show this lack of intensive culture in every department of general farming; of corn, potatoes, grass, and fruits; but it only needs the spur of remunerative demand, and this country will rush to meet and supply the need. This is general farming and to what it may develop let me give a single illustration.

The Isle of Jersey is the land of open field culture; and the product of the entire island is at the rate of $250 per acre, and this is not in its best sense intensive culture, simply successful farming.

The progress and results obtained in certain countries and islands do not obtain here because conditions do not as yet call for

them. With our vast richness in lands fifteen bushels of wheat per acre have been more profitable than fifty bushels per acre. It is not lack in soil, it is not climatic conditions or changes, that we do not equal the more densely populated countries. We are simply wasteful of our heritage, taking off the cream of richness in the soil, and leaving a heritage of repair for the future to meet. But with the increased demand, rational and specific soil, and selection of seed, the fifteen shall become forty or fifty in the coming years, as naturally and as imperceptibly as the warmth of the sun takes the dew from the grass at our feet.

Now, to turn to the hay crop, one of the money crops of New England; it can easily be raised from less than a ton per acre, as an average, to two and one-half tons with no special culture, just the culture any farmer will give as he finds it profitable for him. On the meadows of Europe, irrigated and enriched, from six to eight tons are obtained in many places, and below Milan, says Kropotkin, 22,000 acres, irrigated with water from the sewers of the city, are yielding from eight to ten tons of hay as a rule.

In oats the average yield is too low for even this country, but better cultivation and new and improved varieties are changing the result to more remunerative returns. Last week's agricultural papers told us of a new variety to produce seventy-five bushels per acre with sturdy stands to carry its product without lodging. This may seem extravagant advertising but it shows the outlook and the expectation. Such instances are sufficient to give us an assurance of future ability in out-door culture to meet the future needs. Even when our present national domain shall be one-half as densely populated as Belgium, and when this country carries a population of one and one-half billions, or more than the present inhabitants of our whole earth, the product of the soil will equal the immense demand.

Next in greenhouse culture. This meets us in the beginning of the century and its success is assured, not only in the immediate vicinity of the cities, but in any remote section of the state, a good selection of products will bring profitable returns, and the results are going to be more and more surprising as we control conditions to insure results.

In the past the soil has been largely brought to and held in

condition by the fertilizing and heat-giving properties of the manures applied. In the future we may believe the soil will be made and the heat provided and maintained by exact and unfailing knowledge. Our own experiment station is showing how to sterilize the soil to insure results, and the astonishing effects of this culture under most favorable conditions, plainly indicating (if these experiments continue to prove as favorable) the immense stride which they insure. In illustration we will glance now to the Isle of Guernsey, the home of greenhouse culture. This island has developed greenhouse culture to a wonderful extent. Ordinary vegetables are grown under glass; the kitchen gardens are glass covered, of which a recent writer says "When I walked through these glass-roofed gardens, which do not know what failure means, I could not but admire the recent conquests of science."

Only one illustration, and this is not new, as I have given it before. The greenhouses of Mr. Bashford, covering thirteen acres, of which Prince Kropotkin says: "When you enter one of these huge glass houses, nine hundred feet long by forty-six feet wide, and your eye scans that world of green embellished by the reddening grapes or tomatoes, you forget the ugliness of the outside view. As to results I cannot better characterize them than by quoting what Mr. Bear, an English writer, who wrote after a visit to this establishment, that the money returns from these thirteen acres "greatly exceed those of an ordinary English farm of thirteen hundred acres, and the product of one year is as follows: 50,000 lbs. grapes cut from May to October; 160,000 lbs. tomatoes; 60,000 lbs. potatoes; 12,000 of shelled peas; 4,000 lbs. beans, all this, besides the subsidiary crops."

This I believe to be largely the culture of the future in Massachusetts. With the best home market in the world within our borders we are to meet all the demands of this market. Greenhouse culture is increasing rapidly and with soil sterilized and fertilizers adapted to plant growth it must increase still further, for in every part of the state it is found more profitable than the old ways and the old farming. Along the northern range of Worcester County cucumbers and tomatoes are added to flowers in greenhouse culture, Leominster leading in this line. From the

Berkshire hills carnations are shipped to the Springfield market, and I have not yet heard of a failure even under present methods; and with sterilized soil, the proper application of heat, and fuller knowledge of fertilizers, I can see no possibility of failure in the future. I look forward to see it said of our state as of the Isle of Guernsey, "Guernsey, like the suburbs of Paris, is a land of market gardening, which has developed into greenhouse culture. All over the island wherever you look you see greenhouses. They rise amid the fields and from behind the trees. They are piled upon one another on the steep slopes of the hills." Only one illustration of production from our College. The past season Professor Stone grew under glass from nine plants of the Rocky Ford variety, three hundred and seventy-six melons, and those of us who were at the June commencement had an opportunity to taste their lusciousness. Compare this with the blighted crops grown in the open air all over the state, and it seems strange that we so slowly adapt ourselves to the better conditions for sure returns.

The progress in agriculture and horticulture is not sufficiently well known and it was with great pleasure that I read the very admirable statement of Dr. Walker of our College before your Society, January 31, on what is being done by the United States government, for this is ably supplemented by our experiment station, and adapted to our conditions. The farmers of the United States, the farmers of our own state, do not realize the great, and in some aspects wonderful work, that is being done for them and through them to the individual, the state, the nation, and the world, by these investigations, experiments, and successes. We used to believe we must work in accord with soil and climate and it was well. It was a part of the success of the past, but today the gardeners make the climate, change the character of the product, acclimatize the plants, change the conditions, raise crop succeeding crop in rapid succession, make the soil they want for each special crop, fertilize and cross fertilize as they desire, sterilize the soil to a wonderful increase of growth and productiveness, produce forage or seed at will, almost, and all this is but the beginning of the new era of this new century. True we may say with Tennyson,

> "Little flower — but if I could understand
> What you are, root and all, and all in all,"

nevertheless we are coming nearer to the heart of nature's forces and the new varieties, the new colors, the improvement year by year in your halls of exhibition, are the proofs of our creative power. The future of this century is assured from the past alone, yet the future shall develop most wonderful advances.

All this proves that our means of obtaining whatever we want upon any soil, under any climate, have been so much improved in these last years of the past century, that we cannot foresee the results that may follow, or the limit of the power of production of the soil. Therefore we see that we need neither war nor pestilence to carry off the surplus population, and starvation will be only the occasional accident of the present century as in the past. The earth is sufficient, the knowledge shall continue to grow with assured results, and the essayist at the beginning of the next century will wonder at our questioning, and confidently predict the future.

Looking forward in the present century we see a wonderful change; let me picture it. We see the fruits of summer grown in January in our own greenhouses, more profitably than in their proper season. We see our own dependent population supplied with every luxury by New England enterprise on New England soil. We see the farmer taking his old stand as a leader in all good enterprises. We see his sons, educated and strong, taking their rightful place and exerting their old-time influence, the strength of the hills, the backbone of the cities. We see the electric car speeding its way from town to town and from village to village, carrying the child to the larger and better schools, and giving free mail delivery to the homes of the country as well as to the city, and carrying the produce from the farm producer to the town or city consumer. We see equal taxation resting "like the atmosphere" on rich and poor alike, every man according to his ability. We see the trusts that hold the farmers in their iron grasp destroyed or made to subserve righteous ends for the benefit of all. We see the bright day when arbitration shall settle the differences of nations and war's costly tribute shall cease. We see the home in which all comforts are found and all graces abound, its approaches, lines of beauty, its crown of blessing the love and contentment that dwell therein. We see wealth of char-

acter and honesty of purpose and life more honored than gold, and honest industry more prized than the indolence of wealth; money valued for the good it can do.

"The man 's the gold for all that."

We see all this, not as a mirage or a far-distant view, but growing nearer and nearer, and never hastening so rapidly to its accomplishment as today.

The development of agriculture in the last decade has been a wonderful illustration of its future possibilities and promise. The natural resources brought to our aid and science that seizes upon and adapts them to our uses. The investigations now bringing their results to us in the great work of the Agricultural Department at Washington, our experiment stations, and the practical results being wrought by and through them, the agricultural knowledge attained at our agricultural colleges and working its results in the actual operations of our progressive farmers. The new departure of proved value in the production of crops, each and all working together have so largely outrun the increase in population that we look upon the present century with its threefold increase, not only sure that the agriculture of this country will meet all its demands, but that it will at its close stand as today, the granary of the world.

Discussion.

President Hadwen. After having listened to this most interesting and eloquent address, I now declare the meeting open for the discussion of the subject, and will call upon Mr. Ware to break the ice.

Benjamin P. Ware. I have listened very attentively and very profitably to the essay. I have often thought how it is going to be possible in the future to feed the rapidly increasing population of this great country of ours. This question has come up from time to time and we have had today an answer to it.

In riding on any of the railroads across this state, you will be surprised to see what a small proportion of the land is really under cultivation, and with the increase of production by the methods

stated in the lecture, I think we need have no fear as to how the people in the future are to be fed.

I have heard it seriously discussed that chemical science is going to feed the public in the future; that our food will be made up into little tablets that we can carry around in our vest pockets. I am thankful for the assurance, that the lecturer gives us today, that we will not have to be fed on chemicals in the future, and that we will not in our day, nor will our descendants be obliged to give up the pleasure of catering to healthy appetites. It has been shown by the lecturer that we need not worry about the future, in this respect at least.

Thomas Harrison. I would like to ask what are the methods of the State Board of Agriculture in encouraging the production of crops. Why would it not be a good plan to exempt from taxation for a term of years land that is being improved by cultivation? The farmer spends many years in growing an orchard, for instance, and is taxed at an increasing rate every year, often paying more in taxes than the income he receives from his land. It would be a real help to the farmer if, during the period of improvement of his land, a certain number of acres were made free from taxation.

Mr. Stockwell. Massachusetts is continually doing something for the farmer, not by giving him money, but by aiding him to improve his farm. The farmers of this country are far differently situated from those of the old world. Here the small farmer owns his land; there he only rents it. Here the farmer gets a little ahead each year and, as a class, is getting a little richer all the time.

Every boy that goes from the Agricultural College at Amherst is doing something for the farmer, and every year shows progress in more intensive cultivation.

Varnum Frost. I am glad to hear one man speak a good word for the agriculturist, for it is a trade side-tracked the world over. Farming today is the closest in my remembrance. It was easier forty years ago to get ten dollars for produce than it is now to get two dollars; then the crops did better and were of better quality; and as for science, Where is the science that comes in in farming? A man who has common sense, who likes work better than any

play, is qualified for the business and will make farming pay. I presume the majority of this audience takes it all in. Sterilization of the soil originated at Amherst. We have about as good farmers out in Arlington as there are anywhere, but they now condemn sterilization and are having trouble with it. It is a failure after the first crop, for mildew sets in and does great damage. Greenhouses freeze up and those who have had experience are not so enthusiastic about farming.

Mr. Stockwell. I am very glad that this side of the subject has come up. It is true that farming is not as profitable as we would like to have it, but as a rule greenhouse culture is today profitable, and is destined to become more so, especially as it has been shown what a yard of earth can do. I do believe that the science and knowledge that are being placed at the service of the farmer by the United States Department of Agriculture and the State of Massachusetts are a great help and that the outlook for agriculture was never brighter than it is today.

Mr. Frost. The great trouble with the farmer of today is the extravagance of the age. Seventy-five per cent of the people live beyond their means. Through the extravagant ideas of the times the taxes are being steadily increased, and the rate in some of our suburban towns, which used to be eight dollars on a thousand, is now twenty dollars. The farmer should get a larger proportion of what his goods are really sold for; he disposes of his produce to the middleman, and the middleman gets more for handling it than the farmer does for raising it.

Mr. Harrison. I want to suggest how the farmer can be benefited by the State Board of Agriculture. I think that anyone starting an orchard should be exempt from taxation for five years.

Mr. Ware. I do not think it is desirable to release an orchard from taxation. Many attempts have been made to exempt farm lands from taxes, but that would be class legislation.

If you are going to exempt any landed property it would seem as if it ought to be woodland, where it takes from twenty to thirty years to get a crop.

I do not think it necessary to subsidize orcharding; it is too much like a ship subsidy; and farmers do not approve of that. Farmers are able to handle their own business and are, on the

whole, as prosperous as any class of citizens. Speaking about the work of the United States Department of Agriculture and its value to the farmer, I want to mention one fact that has come under my observation.

The seeds sent out by the Department of Agriculture are not, as is well known, used generally by the farmers, but I know of one case in which they have produced a good thing. The old Mason cabbage, now called the Warren Stone Mason, which has been extensively grown for the last forty years, came from a package of those government seeds.

It is decidedly the best cabbage grown and has been worth hundreds of thousands of dollars to the farmers of Massachusetts.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 14, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President HADWEN presided and the following lecture was delivered under the John Lewis Russell Bequest:

THE DISEASES OF THE POTATO IN RELATION TO ITS DEVELOPMENT.

BY PROF. L. R. JONES, UNIVERSITY OF VERMONT.

The potato has long been one of the most commonly cultivated plants of our fields and gardens. Yet it is the most variable in yield of our standard crops and the most liable to diseases and failure from causes the least understood. Why is this? A partial explanation may be found in the fact that it is a semi-tropical plant which has been brought under cultivation in the northern climate by rapid and intensive breeding. Our season of growth is shorter by one-third or even one-half than that of its natural habitat. There it reproduces itself primarily by seeds and secondarily by tubers. Here, by breeding and selection, man has

so changed the conditions that seed production is almost unknown, while the size and number of the tubers are enormously increased.

For information upon these points I am largely indebted to Mr. Cyrus G. Pringle, the botanical explorer, who is thoroughly acquainted with the potato, both wild and cultivated, as it occurs in Mexico. In the gardens there, it is planted in March and harvested in December. The period of blossoming and maturing seed is in August and September, whereas the tubers are formed one or two months later.

Reproduction by seeds is a sexual process, that by tubers is vegetative. Both are exhaustive of vital forces. The two are, therefore, in a physiological sense opposed, and cannot well be carried on at the same time. Under the natural condition of the wild plant the seed precedes, with our shorter season and intensive culture we have crowded the two processes together until they tend to overlap. That is, we have forced the tuber-production back into the period which in the wild plant is given to the production of flowers and seeds. As a result we have, just after the potato plant comes into blossom, a strained and unnatural condition; a state of physiological tension, of stress between two opposing vital tendencies. According to the mode of its ancestors the major part of the plant's energy would then be tending upward toward flower and seed; but tuber production in the high-bred specialized plant begins immediately and the acquired tendency is for this process to claim the major part of the food.

As a result of this conflict of tendencies in the plant there occurs a *critical period* during which the continued health of the plant, if not its very life, hangs in the balance.

Whether this explanation is correct or not, the fact is certain that the fortnight including and immediately following the blossoming period is the turning point, the crisis in the life of the potato plant.

The production of a profitable crop depends more upon its protection at this period than at any other during its growth. Before this time it will quickly recover from very severe ravages of insects; a little later it will do the same; but serious injury to the foliage or arrest of development by unfavorable soil conditions at this period will start the plant upon a decline which is

disastrous to the crop of tubers and leads to the premature death of the tops; and, in my experience, no subsequent treatment makes amends for neglect at this time. If, however, the plant is carried in full vigor through this critical period it starts upon what is virtually a new lease of life, a vegetative period which, with the more vigorous varieties in our northern climate seems to have no natural terminus. The length of this subsequent period of vegetative development seems dependent not on internal factors primarily, but on external conditions, chiefly climatic, which have so varied at Burlington during recent years as to bring successive crops of the same variety and on the same soil to so-called maturity at dates varying from September 25 to November 10. It is during this second or vegetative period that all of the marketable crop is developed. It is for this that we have grown the plants, and it is important, therefore, to inquire more exactly when and at what rate this development occurs. In order so to trace the relative rate of growth of the crop through the months of August and September partial diggings have been made with ten day intervals during three seasons at the Vermont Experiment Station. These have revealed the surprising fact that with vigorous varieties, properly cared for, one-half of the marketable crop of tubers develops after the 22d of August. The following results of one such season's growth is typical of them all:

The Development of the Potato Tuber.

White Star Potatoes, Planted May 20th, at Burlington, Vt., Yields and Size of Tubers at Different Dates.

Date of digging.	Total yield per acre.	Yield of marketable size.	Average size of tubers.
Aug. 2	58 bu.	30 bu.	1.6 ounces.
" 12	115 "	75 "	2 "
" 22	230 "	163 "	3.7 "
Sept. 1	304 "	234 "	4.4 "
" 12	356 "	303 "	5.2 "
" 22	379 "	353 "	5.7 "

It is noteworthy as indicating how little the fundamental importance of the continuous health of the plant during this vege-

tative period is appreciated, that the date of its beginning is almost coincident with that when the average potato grower abandons his plants to weeds, insects, and blights. The thrifty New England farmer is ashamed to have his neighbors see weeds or bugs in his field before this period, but on the other hand he feels called upon to defend, if not to apologize for his course, if later than this he pulls weeds, or sprays to protect his plants. Yet the beginning of this vegetative period is the very time when certain insects, notably flea-beetles and grasshoppers, do their worst work; and it is often serious work, indeed. If a period of dry weather follows, and, if the soil is either caked or weedy, tip-burn is the inevitable result; and when this begins it is as a rule prophetic of the steady decline of the plant to its death. Tip-burn is a physiological disease due to inadequate water supply. The potato requires more water than do most plants; indeed, the production of a full crop demands that fully one-fourth of all the water that falls on the soil during the entire season shall be absorbed by the plant, and either retained or passed off through its leaves. Moreover, the time of most active demand for this water is at and shortly following the critical period. The securing of this water supply is dependent upon three things. First, the water-containing character of the soil, determined by humus-content and through pulverization. Second, surface tillage to conserve this. Third, healthy foliage to carry on transpiration which is the pumping process in plants. Much of the so-called "blight" of potato foliage is really tip-burn, due to insufficient attention to one or all of these things.

Starch manufacture is scarcely second to water supply in importance for tuber formation; this occurs entirely in the green leaves under the invigorating influence of sunlight. The extent of healthy surface is, therefore, an exact index to the capacity for starch formation. When it is remembered that one-half of the possible crop may be formed after the third week in August, the importance of the preservation of the healthy foliage through the early autumn becomes apparent. Certainly the average potato grower has no just conception of his dependence upon this late foliage for a full crop. As evidence of this we are frequently asked by intelligent farmers whether there is not danger of their

plants "running to tops" as a result of the spraying, and whether, in that case, they should not prune them back or break them down. In one case last summer, a man who had sprayed and thus secured a fine stand of healthy plants was advised by his neighbors that he was ruining his crop and must cut the stems back. About the middle of August he wished us to visit his field and advise him in the matter. We did so and offered, on behalf of our Experiment Station, to pay him for possible loss if he would cut back the tops by one-half in alternate rows in his field and report the outcome to the Station. The result was a yield of one hundred and fifty-two pounds where pruned as compared with two hundred and twenty-one pounds where unmolested. In one form or another this misunderstanding of the necessity of healthy foliage for full tuber production is so common that we have been led to seek for its explanation. Apparently it is chiefly founded on two misconceptions. The first is based on the fact that certain conditions, such as moist cloudy weather, which lead to the growth of rank foliage, do not give correspondingly large yields; but a moment's thought shows that the difficulty here is not that there is too much foliage, but that there is too little sunlight. The second and more general misconception is the confusion of the principles governing seed reproduction, as it occurs in apples and tomatoes, with those governing vegetative reproduction, as it occurs in the potato. It is a common practice to stimulate the former by pruning and the inference is wrongly made that the same process may give like results with the latter.

But the greatest enemies of the New England potato crop in this latter stage of its development are the diseases due to fungi or bacteria — the blights and the rots.

Twelve years ago when one spoke of potato blights only one thing was suggested — the dreaded mildew; that fungus which swept the fields of Ireland in 1845 and left the land famine-stricken. Perhaps, indeed, we may date the earnest study of plant diseases from that year. Berkeley and De Bary in Europe, and later Farlow in this country, together with other mycologists gave careful study to this disease and proved beyond question that it was caused by a fungus [1] which invades the leaves and passes from

[1] Phytophthora infestans.

them to the tubers causing the dry rot. This malady is more or less familiar to all potato growers, but as a rule they dread it most because of the rot. As a matter of fact this direct loss from rot is relatively of less account under our New England condition than is the indirect loss from the blight. We appreciate the former more keenly because it occurs after the crop is grown, perhaps after it is harvested. It is visible, tangible, and loudly mourned when it occurs, but the premature death of the foliage which means the loss of possible growth of what might be, is actually of far greater consequence. For example: in 1893 the blight appeared upon our field at Burlington, August 10 and by August 20 practically every unsprayed plant in the field was dead. Upon digging in September the yield of sound tubers was found to be one hundred bushels per acre, with some twenty-five bushels showing the rot. This seemed a serious loss but compare with it the conditions where the plants were sprayed, when the yield was three hundred and twenty-four bushels of sound tubers per acre, and only three bushels of rotten ones. The total gain from checking the disease was two hundred and twenty-four bushels per acre, but of this only twenty-one bushels, or less than ten per cent was due to the checking of the rot, the balance, two hundred and one bushels, was due to the prolongation of the life of the leaves. And if we compare the date just given for the death of the plants with those previously listed for the development of the tubers, it is at once evident how this is explained. Indeed, so used have the potato growers become to these ravages of insect and blight on the potato foliage in August and September, that a majority seem to consider them inevitable, if, indeed, they do not think them the natural accompaniment of the ripening process of the plant. As a matter of observation in Vermont I believe I would be overstating the facts if I said that twenty-five per cent of the potato plants reach even approximate maturity; in other words over seventy-five per cent of them die prematurely.

Thus far we have traced the relation of but one fungus to this destruction of the potato foliage. Soon after the development of the present system of Agricultural Experiment Stations, critical attention was directed anew to the causes of the potato blights of Vermont and other sections, and it was found that there was

much trouble from some obscure diseases other than those caused by this familiar mildew. In certain seasons a leaf-spot fungus[1] causes more loss in many parts of New England than does the mildew, and further south and west the proportional destructiveness of this more recently recognized fungus is even greater. It is no "new" fungus; indeed, I find it on the specimens of the wild potato which Mr. Pringle brings from Mexico. It was overlooked until about ten years ago, simply because it was so intimately associated with the mildew in its development and so similar in appearance. From the economic standpoint, however, it differs from the mildew in a noteworthy respect, in that it never leads to the rot. To distinguish these two diseases the popular names in use in this country are "early blight" for this latter as contrasted with the "late blight" and "rot" of the former.

More recently Dr. Erwin F. Smith of the National Department of Agriculture has shown that the most serious malady of potatoes in the South known as the brown rot is due to neither of these fungi but to a bacterium.[2] This attacks both tops and tubers and is very destructive. I have learned of its occurrence in the Hudson valley as far north as Newburgh and without doubt, it has invaded southern New England, although I have not as yet observed it in Vermont. A stem blight, apparently due to bacteria, was reported to us from two sections of Vermont last year and may be more common than is yet known. A similar disease due to bacteria has been reported this last year as destructive in France and other European countries.

Again I would remind you that all of these diseases, unless possibly it is the brown rot, are to be feared chiefly because they destroy the tops prematurely and so shorten the later growing period of the tubers.

In closing this part of the discussion, What can be said as to remedies? In the first place let us emphasize the importance of more attention to the soil conditions — humus, tilth, and to cultivation, with the view of increasing and conserving the water supply. These make the large crop possible. Having done this

[1] Alternaria solani.

[2] Bacillus solanacearum.

one cannot afford not to spray. As a result of comparative trials of a wide variety of fungicides extending over thirteen years, at the Vermont Experiment Station, we have found Bordeaux-arsenic-mixture to be an almost perfect preventive of all the diseases and insects attacking the foliage of the potato plants. It is apparently almost worthy the title of a "cure-all." During this time we have not failed once in carrying the foliage upon vigorous late potatoes to practically full maturity by making from one to three applications of this mixture following the blossoming period. The various dates of spraying and the gains therefrom are briefly shown in the following tabular summary.

GAINS FROM USE OF BORDEAUX MIXTURE ON LATE POTATOES.

Variety	Planted	Sprayed	Yield per acre		Gain per acre
			Where sprayed	Where not sprayed	
White Star ..	May 11, 1891. .	Aug. 26, Sept. 8.	313 bu.	248 bu.	65 bu.
" " ..	May 20, 1892. .	July 30, Aug. 13, 25. . . .	291 bu.	99 bu.	192 bu.
" " ..	May 20, 1893. .	Aug. 1, 16, 29.	338 bu.	114 bu.	224 bu.
" " ..	Apr. 26, 1894. .	June 16, July 17, Aug. 30	328 bu.	251 bu.	72 bu.
" " ..	May 20, 1895. .	July 25, Aug. 13, 31. . . .	389 bu.	219 bu.	170 bu.
Polaris	May 15, 1896. .	Aug. 7, 21.	325 bu.	257 bu.	68 bu.
"	June 1, 1897. .	July 27, Aug. 17, 28.	151 bu.	80 bu.	71 bu.
White Star ..	May 10, 1898. .	July 21, Aug. 10.	238 bu.	112 bu.	126 bu.
Average 3 yrs	May 18, 1899. .	July 26, Aug. 17, Sept. 8	229 bu.	161 bu.	68 bu.
Delaware	May 23, 1900. .	Aug. 4, 23.	285 bu.	225 bu.	60 bu.
"	May 25, 1901. .	July 20, Aug. 21.	170 bu.	54 bu.	68 bu.
"	May 15, 1902. .	Aug. 1, 20.	298 bu.	164 bu.	134 bu.
Averages for twelve years.			280 bu.	165 bu.	115 bu.

In comparison with this mixture we have tested every other fungicide of any promise which has come to our attention, and find nothing equal to it in the fresh home-made form, although some of the ready-made Bordeaux mixtures on the market are excellent. Let me add my testimony to that of previous lecturers that Bordeaux mixture varies widely in character depending upon the way it is made.

Two practical questions are frequently asked, which have not as yet been touched upon. First, the relation of date of digging to the development of rot, *i. e.*, whether, in case the blight has killed the tops it is better to dig the crop at once, or to let it lie for

sometime in the soil. There will be serious loss from rotting in the soil in the latter case and from rotting in the cellar in the former. Which is the lesser of the two evils? Last season the blight began to develop early and an unusually good opportunity was offered for testing the matter. Experimental diggings were made by the Vermont Station at four dates ranging from August 25 to September 30, and in six fields including various conditions of soil and disease none of them having been sprayed. The results are summarized in the following table.

Dates of digging	Aug. 25	Sept. 6	Sept. 18	Sept. 25
Average total wt. per row at each date	28.6 lbs.	26.2 lbs.	25.9 lbs.	24.9 lbs.
" weight which were sound on Sept. 30	18.7 "	20.9 "	23.5 "	23.0 "
" decay on and before Sept. 30 in pounds	10. "	5.3 "	2.4 "	1.9 "
in percent	35 %	20 %	9 %	8 %

Without going into the details, we would say that as nearly as we can formulate conclusions based upon this trial of a single year, it is that where the tops have blighted and there is danger of rot quite as much of it will occur in the cellar as in the field and, therefore, it is better to delay the digging until some ten days or more after the last tops are dead; and a longer delay will do no harm.

The other question is, as to whether there is hope that science will suggest some way to rid us of the disease other than by the troublesome method of spraying. It has not done so up to present time, therefore it behooves us to spray; but will it in the future? So far as known the late-blight fungus lives over winter only in the tubers and is perpetuated from year to year in such infected tubers used as seed. If so, cannot they be disinfected? Unfortunately, this fungus is not, like the potato scab germs, lodged on the surface; it is internal and, therefore, chemical disinfectants offer no promise. The only hopeful suggestion has come from a European botanist, (Jensen), and is based on the known sensitiveness of the fungus to heat. It is that by heating such infected tubers for about six hours at a temperature of 104°

to 108° F. in a dry oven, the fungus may be killed without injury to the tubers. This matter has been tested at the Vermont Station and the tubers grew all right. It has not been fully demonstrated, however, that this treatment destroys the fungus, and even if it does it is not practical for the ordinary potato grower.

Unquestionably, however, more attention should be given to the selection of uninfected seed. The thought is worth suggesting, at least, that if every potato grower in this country were to plant sound seed potatoes for one season the fungus might go out of existence, so far as we are concerned, until again imported. There is another hope, however. The variability shown by man and the domestic animals in individual power of disease-resistance has led plant breeders in recent years to give increasing attention to the possibility of such individuality of resistance in plants. It has long been known to horticulturists that this occurs with some varieties, at least, toward certain diseases.

For example: a few varieties of apples are perfectly resistant to the rust, and some to a lesser degree resistant to scab. Recent investigations by botanists of the National Department of Agriculture have led to the discovery of remarkable disease-resistance in individual cotton plants and more recently in cow peas and, moreover, this is perpetuated in the offspring, so that seed of these "iron clad" races are now being distributed by the government to the southern farmers. Plant pathologists and plant breeders should be stimulated by these results to renewed courage in their search for resistant varieties and individuals in other kinds of pest-ridden cultivated plants. A blight-proof potato may not be an impossibility.

A series of lantern slides were shown illustrating the development of the potato, the nature of its diseases, the relative values of various fungicides as used in potato fields and orchards, and methods of spraying. In connection with these the following practical points were brought out:

The bordeaux-arsenite mixture excels in that it is a complete

fungicide and insecticide and very adhesive. In its preparation one should first dilute the copper-sulphate solution and the lime water, then either pour the former into the latter, or pour both into a common receptacle and mix quickly and thoroughly. Unless made in this way the mixture is liable to clog pump or nozzle and is less adhesive.

When Paris green is applied in water, apart from the Bordeaux mixture, an equal weight of lime should be mixed with it to prevent danger of burning the foliage.

For most farms the barrel pump operated by hand power is most economical and satisfactory. When used in the potato field this is best carried on a one-horse cart, with two wheels, set about six feet apart so as to straddle two rows while the horse walks between. Excellent power pumps are now on the market for larger operators.

Slides were shown illustrating the fact that proper spraying prevents the scabbing of pears and apples.

The results of four applications of Bordeaux-Paris-green mixture as compared with Paris green alone, in one orchard, were as follows, the value of the crop being practically doubled:

	1st class.	*2d class.*	*3d class.*
Flemish Beauty Pear, sprayed,	94 per cent.	6 per cent.	0 per cent.
" " " not sprayed,	55 "	43 "	2 "
Winter Strawberry Apple, sprayed,	65 "	24 "	11 "
" " " not sprayed,	31 "	45 "	24 "

In another orchard of Fameuse or Snow apples upon which the scab is very destructive the gains were even more noteworthy:

	"Select"	*1st class.*	*2d class.*	*3d class.*
Sprayed:	40 per cent.	20 per cent	30 per cent.	10 per cent.
Not sprayed:	none	5 apples!	4 "	96 "

The apples from each tree were placed on the market. Those from the sprayed tree brought $15.44, from the unsprayed tree $2.15.

Discussion.

Benjamin P. Ware said he wished to make one or two inquiries of the lecturer. He had had some difficulty in properly preparing the Bordeaux mixture so that it would not clog the nozzle of the sprayer, and it had been recommended to him to use the lime water after allowing the lime to settle. He had used the usual formula of ten pounds of lime to fifty gallons of water. He asked if this would have the full power and strength necessary to the mixture. He also asked when potatoes should be sprayed and how many times during the season.

The lecturer replied that he could not believe that the lime water could be used with success in the preparation of the Bordeaux mixture. As to the spraying of potatoes he did not find it profitable to spray more than two or three times; twice on an average, and usually in August; the first application to be made during the first week and the second in the third week of the month.

These statements, however, are based upon Vermont conditions; further south there are certain of these maladies that appear earlier in the season.

The potato blight commences when the plant is in its most vigorous growth and the damp, humid weather of August gives the fungus its opportunity for development. The rule in spraying is always to get a little ahead of the earliest possible appearance of the blight.

The destructive development of the fungus is dependent upon the coincidence of certain weather conditions and a certain stage of growth of the plant. The blight rarely or never shows until the potato passes the blossoming stage, and the extent of the development then depends upon the humidity of the atmosphere.

Aaron Low inquired whether, if it should rain soon after spraying, it would be necessary to repeat at once.

Professor Jones replied that the peculiar value of the Bordeaux mixture is its capacity to hold. It would set in three hours, so that a rain coming on after that time would not render a repetition of the spraying necessary. He had found that with some of the less adhesive fungicides, the addition of a little glue or molasses was beneficial.

Thomas Harrison asked what was the value of the lime in the Bordeaux mixture, and if any substitute for it could be used.

Professor Jones stated that the lime was necessary to neutralize the acid of the mixture, and that no satisfactory substitute had been found. Sal soda had been tried, but nothing superior to lime was known. The soda does not have the adhesive quality of the lime.

Mr. Low called attention to the fact that the potato plant does not now produce the quantity of seed balls that it used to thirty or more years ago, and asked the reason for this change in the habit of the plant.

Professor Jones, in reply, stated that he did not believe it to be a sign of weakness, neither did he believe it a result of Paris green poisoning, as some have thought, but that it represents a change in the life history of the plant, brought about by cultivation. We have continually bred away from seed production, to tuber production, and we could doubtless breed back again, if we desired, to seed production, at the expense of tuber production.

Mr. Ware asked, whether if the potato blight had manifested itself in a small way, spraying would check it.

To this the lecturer answered, that it is important to begin spraying before the blight appears, for it spreads very rapidly. If done in season it would check it.

Mr. Harrison stated, that in planting potatoes some advocate the planting of small tubers and some of large ones, cutting these latter to two eyes. He asked the lecturer's opinion on this matter.

Professor Jones answered that it is the result of experience that the more weight of seed you put into the ground, the more yield. You get more yield where you put in more starch as food for the young plants.

We can best afford to take ten or fifteen bushels of seed to the acre under ordinary New England conditions. He approved of planting small potatoes whole, and larger ones cut in halves.

Mr. Ware asked at what stage of growth they should be sprayed.

Professor Jones replied that spraying should begin promptly after blossoming, or perhaps, one application may be made before the blooming period, when the plant is in its most vigorous growth.

CONTENTS.

EXPERIMENT STATION REPORTS WANTED.

The Massachusetts Horticultural Society is endeavoring to collect complete sets of the Bulletins and other publications of all the Agricultural Experiment Stations in the United States and Canada. Those named below are wanting, and any person having a spare copy will confer a favor by addressing the Librarian of the Society, Horticultural Hall, No. 300 Massachusetts Ave., Boston.

Alabama (Ag. and Mech. College Station). — Bulletins 4–6 (1884), 7–10 and 1–4 (1885), and 5–9 (1886). 7th Annual Report, for 1894, and 9th, for 1896.

Alabama (Canebrake Station).— All Bulletins later than 18, and all Annual Reports later than the 3d, for 1890.

Alabama (Tuskegee Station).— Bulletin 2.

Arizona.— 4th Annual Report, for 1893.

Arkansas.— Bulletin 1. All Annual Reports later than the 4th, for 1891, except the 8th, for 1895.

California.— Bulletin 32, 1878, and 1, 2, 3, 5 and 50, New Series.

Colorado.— Bulletin 3.

Connecticut (New Haven Station). — Bulletins 1 to 67, inclusive. Annual Reports for 1877 and 1879 to 1883, inclusive.

Florida.— Annual Report for 1892.

Indiana (Purdue Univ. School of Ag.).— Bulletin 1. College Reports 1–14, inclusive.

Iowa.— Bulletins 54, 55 and 56. (The original bulletins).

Kentucky.— Bulletin 10.

Michigan. — Special Bulletin 1. 6th Annual Report for 1892-93 (contained in Report of Michigan Board of Agriculture, 1893).

Missouri. — Bulletins 9, 13, 15, 16, 19, 20, 25 and 26 of Old Series. All Annual Reports since the 1st, for 1888, except those for 1896 to 1898, inclusive.

Montana. — Bulletins 27, 29 and 31.

New Jersey.— Bulletins 1, 4, 5, 15, 27 and 28.

New Mexico.— Eighth College Catalogue, 1897–98.

New York (Cornell). — 1st Annual Report, 1881–82, and all between that and 1888, except the 2nd, for 1882-83. (Reports of Agricultural Department of Cornell University.)

North Carolina.— Bulletins 1 to 56, inclusive, 69, 2d ed., and 174. 1st to 7th Biennial Reports. Meteorological Division, Bulletin 2 (68*b*). Special Bulletins 1 (77*a*) and 4 (82*a*). Weekly Weather Crop Bulletins 1–21, 1888 ; 1–24, 1889 ; 1–25, 1890 ; 2 and 4, 1891.

North Dakota.— 4th Annual Report for 1893.

Ohio.— All Bulletins of First Series, except 16, 17, 18 and 19.

Oklahoma.— All Annual Reports previous to that for 1896–97, except that for 1893-94.

Pennsylvania.— Annual Reports for 1869, 1872, 1879–80, 1881, 1882, 1883 and 1884. [All issued by the State College] Bulletin of Information No. 1.

South Carolina.— All Bulletins of the Old Series (previous to 1888) on the work of the Experimental Farm of the South Carolina College. 3d Annual Report, for 1890, and 6th, for 1893.

Texas.— College Bulletins 1–5, 1883-1887.

Virginia.— 10th Annual Report for 1898-99.

Washington. — Bulletins 28 and 29. 6th, 7th and 8th Annual Reports, for 1895–96, 1896–97, and 1897–98.

West Virginia.— Special Bulletin — Potash and Paying Crops, 1890.

Wyoming.— Bulletins 2 to 4, 9 and 10.

Ontario Department of Agriculture, Toronto.— Bureau of Industries.— Agricultural Returns to the Ontario Bureau of Industries, Nov. 1882 (5th), Aug. 1883 (7th), and Nov. 1887 (20th).

TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1903.

PART II.

BOSTON:
PRINTED FOR THE SOCIETY.
1904

☞ SEE LAST PAGE OF COVER.

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PART II.

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, April 4, 1903.

A duly notified stated meeting of the Society was held at eleven o'clock today, the President, O. B. HADWEN, in the chair.

The President reported from the Executive Committee a recommendation for the appropriation of one hundred dollars, to be paid to Aaron Low for services as Chairman of the Committee on Lectures and Publications, and, on motion of Wm. C. Strong, the recommendation was adopted.

The President also reported from the Executive Committee a recommendation that the sum of one hundred dollars be appropriated for prizes to be awarded at the meeting of the Chrysanthemum Society of America on November 10-12 of this year. The prizes to be given to members of the Massachusetts Horticultural Society exhibiting at that meeting. On motion of Mr. Strong the recommendation was adopted.

Mr. Strong spoke of the Biennial Session of the American Pomological Society which is to be held at Horticultural Hall, Boston, September 10-12, 1903, and moved that a committee of five be appointed to make such preparation as may be necessary.

The motion was adopted and the President appointed as the committee, William C. Strong, William H. Spooner, E. W. Wood, William H. Elliott, and John A. Pettigrew.

Under the head of Deferred and New Business, Dr. Henry P. Walcott moved, that the new By-laws which had been proposed at the January meeting be accepted and adopted.

As chairman of the committee on revision of the Constitution and By-laws, he stated that the new By-laws had been twice read at the January meeting, a copy had been mailed to every member of the Society, and, in accordance with the requirement of the present Constitution, had been referred to this meeting for final action.

Mr. Strong inquired if the amendments adopted at the January meeting were carried with the vote of today. The President answered that they were.

The motion of Dr. Walcott was then put and unanimously voted.

Michael H. Norton offered to the Society as a gift from Mrs. Robert M. Bailey of Dedham, granddaughter of General H. A. S. Dearborn, the first President of the Massachusetts Horticultural Society, the manuscript of the address delivered by General Dearborn on the occasion of the first anniversary of the Society, September 19, 1829. It was voted to accept the gift of Mrs. Bailey and to convey to her the thanks of the Society for the interesting relic.

The following named candidates having been duly recommended by the Executive Committee were, on ballot, elected to membership:

Scott Doten of Jamaica Plain,
Miss Mabel Cabot of Brookline,
Edward R. Cogswell, Jr. of Cambridge.

A communication from Arthur Cowee of Berlin, N. Y. was read, offering as a prize for the best display of Groff's Hybrid gladioli, one hundred of his Gold Medal and Silver Trophy strain varieties. On motion of Mr. Strong it was voted to accept the offer of Mr. Cowee and to refer it to the Committee on Establishing Prizes.

On motion of John Parker it was voted to refer the Dearborn manuscript to the Committee on Publication.

On motion of Mr. Spooner the meeting was dissolved.

WILLIAM P. RICH,
Secretary.

BUSINESS MEETING.

SATURDAY, July 11, 1903.

A duly notified stated meeting of the Society was held at eleven o'clock today, the President, O. B. HADWEN, in the chair.

Kenneth Finlayson, chairman of the committee appointed to prepare a memorial of the late Benjamin Grey, reported as follows:

IN MEMORY OF BENJAMIN GREY.

Benjamin Grey, late of Malden, the well-known florist, nymphæa and orchid grower, died at his home, March 5th, aged fifty-six years and six months. He had been a life member of the Massachusetts Horticultural Society for many years.

He was born at Ayton, Yorkshire, England, August 7th, 1846, and at the age of seven years came with his parents to America, settling for a while in the West. He afterward came East to Farmington, Connecticut, and later with his parents moved to Albany, New York, where his father, the late William Grey, was superintendent of the estate of Hon. Erastus Corning, the owner of one of the best known orchid and plant collections in the country. Here Mr. Grey learned his profession.

At the breaking out of the Rebellion he enlisted in the 177th New York Volunteers and afterward in the 123d Independent Battery, which was later transferred to the 8th Artillery, participating in the noted battles of Cold Harbor, Port Hudson, Spottsylvania, Fall of Richmond, and Lee's Surrender.

Returning home he engaged in his favorite occupation of gardening for several years, part of the time in the employ of Edward S. Rand of Dedham, Massachusetts, owner, as will be remembered by the older members of this Society, of a noted collection of orchids, as well as of other choice plants.

Thereafter Mr. Grey engaged in the business of a florist spending most of his time in Malden, the place of his demise.

To Mr. Grey, more than to anyone else, is due, we believe, the credit of priority for the cultivation of the orchid and nymphæa for commercial purposes in the New England states, if not throughout the country at large; no small testimony to his innate love for the beautiful in floriculture; and to this particular branch of plant life he chiefly confined his energies in late years.

Mr. Grey was a most genial and social person, keen and observant of nature's treasures.

He is survived by his wife, Harriet O. Grey, and three daughters. Two brothers, both gardeners, also survive him, one of them being Robert M. Grey late at the Oakes Ames estate at North Easton, Massachusetts, and until recently a member of the plant committee of this Society.

Resolved, that in the death of Benjamin Grey, the Massachusetts Horticultural Society has lost an esteemed associate, a valued horticulturist, and a staunch defender of his adopted country's honor and dignity.

Resolved, that this memorial be printed in the Transactions of the Society and that a copy be forwarded to his bereaved family.

KENNETH FINLAYSON,
DAVID F. ROY,
PATRICK NORTON. } *Committee.*

On motion of John L. Bird the memorial was accepted and referred to the Committee on Publication.

The President reported from the Executive Committee a recommendation for the appropriation of twenty-five dollars, towards the purchase of an additional card-catalogue case for the library. On motion of William H. Spooner the recommendation was adopted.

The Secretary reported the death of ten members since the last meeting of the Society.

William C. Strong, in referring to the number of deaths, thought it would not be possible nor convenient to appoint a special committee for each one and moved, and it was voted, that the Secretary be appointed necrologist and that he prepare suitable memorials of the deceased members for publication in the Transactions of the Society.

On motion of Mr. Strong the President appointed the following named members a committee to represent the Society at the approaching Biennial Session of the American Pomological Society:

President O. B. Hadwen, *Chairman*,

William C. Strong,	J. K. M. L. Farquhar,
William H. Spooner,	Joseph H. Woodford,
Hon. J. R. Leeson,	Henry W. Wilson,
E. W. Wood,	Jacob W. Manning,
Gen'l F. H. Appleton,	B. M. Watson,
Hon. Aaron Low,	Charles W. Parker,
Benjamin P. Ware,	James H. Bowditch,
Benjamin C. Clark,	Warren Fenno,
Charles F. Curtis,	J. Willard Hill,
William H. Elliott,	George F. Pierce,
John L. Bird,	F. W. Damon,
Harlan P. Kelsey,	J. Woodward Manning

A communication from Miss Sarah B. Fay of Woods Hole was read, offering the sum of fifty dollars to be competed for by amateur rose growers at the Rose and Strawberry Exhibition of June 16 and 17. As these prizes were not awarded on the dates mentioned, owing to lack of exhibits, it was moved and voted that the Secretary confer with Miss Fay and ascertain if the offer would continue for another year.

A letter from Robert Farquhar was read, containing his resignation as a member of the Committee of Arrangements and it was voted to accept the resignation.

A letter of acknowledgment from Fred L. Harris was read, conveying to the Society his thanks for the copy of the memorial adopted in memory of his father, the late Frederick L. Harris.

The following named persons having been duly recommended by the Executive Committee were, on ballot, elected to membership:

Benjamin C. Marble of Manchester-by-Sea,
John Lowell of Newton,
Cyrus Alger Hawes of Boston,
James A. Lowell of Chestnut Hill.

On motion of Mr. Spooner it was voted that the meeting be dissolved.

William P. Rich,
Secretary.

BUSINESS MEETING.

SATURDAY, October 3, 1903.

A duly notified stated meeting of the Society (the last under the Constitution and By-laws of 1895) was held at eleven o'clock today, the President, O. B. HADWEN, in the chair.

On the recommendation of the Executive Committee an appropriation of one hundred dollars was voted in payment for the decoration of the halls with plants and flowers on the occasion of the recent Biennial Session of the American Pomological Society.

On motion of William H. Spooner the thanks of the Society were voted to Robert Farquhar in recognition of his services as a member of the Committee of Arrangements.

A communication from William N. Craig, head gardener to Miss Mary S. Ames of North Easton, Massachusetts, was read, offering as a gift to the Society, six large palms of several varieties which would be useful for decorative purposes in the exhibition halls.

On motion of William C. Strong it was voted to accept the gift of Miss Ames, and that the thanks of the Society be conveyed to her, and also to Mr. Craig for his interest in the matter.

Joseph S. Chase offered the following motion:

In consideration of the value of the Foster peach, originated by Joshua T. Foster, late a member of this Society, and in recognition of his valuable service in the interests of pomology, it is hereby voted that a silver-gilt medal of the Society, suitably inscribed, be presented to the family of Mr. Foster.

Mr. Chase, in support of his motion, called attention to the fact that this peach which was frequently shown at the exhibitions of the Society twenty-five to thirty years ago and awarded numerous prizes for its excellence, was still favorably known. He thought as a matter of justice to the memory of Mr. Foster, who has now passed away, that a medal of the Society should be voted.

Mr. Strong seconded the motion, if a medal had not been awarded previously.

E. W. Wood remarked that the Foster peach was today well and favorably known to fruit growers.

The Secretary referred to several of the reports of the Fruit Committee from 1865 to 1879 in which the Foster peach was highly praised.

The motion of Mr. Chase was unanimously voted.

The following named persons having been duly recommended by the Executive Committee were, on ballot, elected to membership:

ROBERT JOHNSTON of Lexington,
STEPHEN CHILD of Auburndale.

The meeting was then dissolved.

WILLIAM P. RICH,
Secretary.

BUSINESS MEETING.

SATURDAY, November 14, 1903.

In accordance with the requirement of the Preliminary Section of the By-laws adopted April 4, 1903, the annual meeting of the Massachusetts Horticultural Society for the year 1903 was held today at Horticultural Hall, the President, O. B. HADWEN, in the chair.

The meeting was called for the election of officers for the ensuing year and for the transaction of such other business as might legally be presented; and 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.

The Executive Committee reported a recommendation that the following amounts be appropriated for prizes, gratuities, and lectures for the year 1904:

For Plants	$1,500.00
" Flowers	1,875.00
" Native Plants	125.00

For Fruits	$1,275.00
" Vegetables	900.00
" Gardens and Greenhouses . . .	375.00
" Lectures	200.00

On motion of Michael Sullivan these appropriations were unanimously voted.

A communication from Kenneth Finlayson was received, resigning the chairmanship of the Committee on Flowers, to date back to August 8, and, on motion of William H. Spooner, the resignation was accepted and the thanks of the Society were voted to Mr. Finlayson for his services on the committee.

On motion of Patrick Norton it was voted that Julius Heurlin be appointed chairman of the Committee on Flowers for the remainder of the year from August 8.

On motion of Mr. Norton it was voted that all reports of officers and standing committees for the current year be referred for acceptance to the Committee on Publication with the exception of the report of the Treasurer which was referred to the Finance Committee.

On motion of Mr. Spooner a recess until ten minutes of twelve was voted and at that time the President again called the meeting to order and announced that the next business was the choosing of officers for the year 1904.

He appointed as a committee to receive, assort, and count the votes, J. Allen Crosby, Patrick Norton, and William P. Rich.

The polls were declared open at twelve o'clock, noon, and the ballots were prepared in accordance with the Australian system. The President, being obliged to leave, called Edward B. Wilder to preside during the remainder of the meeting. At four o'clock P. M. the President *pro tempore* declared the polls closed and the committee on balloting presented a report of which the following is a copy.

"The members of the Society, qualified to vote at its meetings, assembled at Horticultural Hall on Saturday, November 14, 1903, at a meeting duly called as provided for in the By-laws. The following persons were present and served as a committee to receive, assort, and count the ballots: J. Allen Crosby, Patrick Norton, William P. Rich."

The polls were opened at twelve o'clock, noon, and closed at four o'clock in the afternoon. The ballots having been sorted and counted by the committee, the result was as follows:

For President.

HENRY P. WALCOTT, M. D.

For Vice-Presidents.

WALTER HUNNEWELL, (For two years).
WARREN W. RAWSON, (For one year).

For Treasurer.

CHARLES E. RICHARDSON.

For Secretary.

WILLIAM P. RICH.

For Trustees (for three years).

WILLIAM N. CRAIG,
J. K. M. L. FARQUHAR,
ARTHUR D. HILL,
CHARLES S. SARGENT.

For Trustees (for two years).

OAKES AMES,
ARTHUR H. FEWKES,
CHARLES W. PARKER,
WILLIAM H. SPOONER.

For Trustees (for one year).

ARTHUR F. ESTABROOK,
ROBERT T. JACKSON,
JOHN A. PETTIGREW,
MICHAEL SULLIVAN.

For Nominating Committee.

WALTER C. BAYLIES,
WILLIAM H. ELLIOTT,
NATHANIEL T. KIDDER,
RICHARD M. SALTONSTALL,
C. MINOT WELD.

Whole number of ballots cast 55.

J. ALLEN CROSBY,
PATRICK NORTON,
WM. P. RICH. } *Committee.*

The presiding officer, Mr. Wilder, declared the list as presented by the ballot committee to be the duly elected officers of the Society for the year 1904 and the meeting was dissolved.

WILLIAM P. RICH,
Secretary.

REPORT

OF THE

COMMITTEE ON PLANTS

FOR THE YEAR 1903.

By ARTHUR H. FEWKES, Chairman.[1]

A review of the work of this department for the year shows that but few exhibits out of the ordinary have been made although as a whole they have been of excellent quality. While last year was a phenomenal one in the way of new introductions the present has been nearly the reverse, and we have only a few new things to record. A detailed description of these follows.

On January 3 George McWilliam was awarded a First Class Certificate of Merit for a fine seedling, hybrid *Cypripedium*, "Hildegarde Lasell," the result of a cross between *Cypripedium* × *Schlessingerianum* var. "W. W. Lunt" and *Cypripedium* × *Leeanum*. On the next Saturday he showed another fine hybrid, "Marion Lasell," for which he received the same award, a First Class Certificate of Merit. The seed parent was the same as the foregoing, but *Cypripedium Spicerianum* was used for the pollen parent instead of *Cypripedium* × *Leeanum*.

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[1] Correction. In the report of the Committee on Plants in the Transactions for 1902-II an error occurred in printing portions of lines 32 to 34, page 146, which should read: Its seed parent was the same as the Farquhar rose but the Hybrid Perpetual variety, Mme. Gabrielle Luizet, was used as pollen parent.—*Ed.*

The same day Mr. McWilliam exhibited a form of *Cypripedium* × *Leeanum* which was very interesting from the fact that it was the result of a cross between *Cypripedium Spicerianum* and *Cypripedium insigne* var. *Sanderæ*, the latter having been used with the supposition that its decided yellow color would be imparted to the progeny, but hardly a trace of yellow was apparent, the flowers being inferior to those produced where the ordinary form of *insigne* was used for pollen parent, as was proven by several cut flowers which were shown at the same time for comparison. The plant from which these latter were cut was shown on the next Saturday, January 17, and a Society's Silver Medal was awarded for it. The variety is named "G. M. Whitin," and is very distinct in color, the standard being nearly pure white, while the other parts are quite a decided yellow.

On February 7 J. E. Rothwell showed a hybrid lælia, *Lælia* × *Yula*, (*L. purpurata* × *L. cinnabarina*). This is the brightest of the *cinnabarina* crosses that have come under our notice and we awarded the Society's Silver Medal for this. He also showed a fine new seedling, *Cypripedium* × *nanum* var. "Zenobia," (*C.* × *Leeanum* × *C.* × *Lathomianum*) for which he received the Society's Bronze Medal.

March 7 Walter P. Winsor showed two fine new hybrid dendrobiums, *Dendrobium* × *Rolfeæ*, (*D. nobile* × *D. primulinum*), and *Dendrobium* × *Wigamæ*, (*D. signatum* × *D. nobile*). The former is in the way of *D. nobile* but exceedingly delicate in coloring and the latter has the habit of *D. nobile* but more slender, while the flowers are creamy white in color with a crimson throat. A First Class Certificate of Merit was awarded to each of them.

At the Spring Show, March 18, Henry A. Dreer, Inc. exhibited their new golden pandanus, *Pandanus Sanderi* for which they received the Society's Silver Gilt Medal. This variety seems to be much stronger in habit than the old *P. Veitchii*, but it is questionable whether it is any more beautiful than the latter when well grown. The delicate cream white of the *Veitchii* is replaced by a rich golden shade in the *Sanderi*, but the variegation seems

less pronounced in the new variety and shades more into the natural green of the leaf.

Honorable Mention was awarded Walter P. Winsor for a variety of *Adiantum cuneatum* of remarkable size of frond and form of pinnules.

A First Class Certificate of Merit was awarded Wm. Thatcher for a seedling asparagus without name which is of beautiful drooping habit, in the way of *A. decumbens*, and of a bluish-green color.

M. H. Walsh exhibited a seedling hybrid rose of much promise. It is of the rambler type and is a cross between Crimson Rambler and Paul's Carmine Pillar. The plant exhibited was two years old from the seed and showed great vigor, the foliage being a bright, glossy green, and the single flowers are a fine carmine-red color with lighter center. The variety is named Hiawatha, and a First Class Certificate of Merit was awarded Mr. Walsh for it.

Bancroft Winsor was awarded Honorable Mention for Sutton's fine new cyclamen, Sutton's Salmon Pink.

April 4 Mr. Walsh again exhibited the same plant of his new seedling rose, Hiawatha, that he had on exhibition at the Spring Show. It was in fine condition and remarkably full of flowers.

He also showed another seedling rambler rose named Minnehaha, a cross between *Rosa Wichuraiana* and Paul Neyron. The flowers are full double, deep rose-pink in color, darker than the Farquhar rose or Dorothy Perkins. This seems to be a very promising pillar rose with fine foliage and great freedom of bloom, impressing us as worthy of the Society's Silver Medal which was awarded.

May 9 J. E. Rothwell was awarded a First Class Certificate of Merit for an interesting seedling orchid, *Lælia cinnabarina* × *Cattleya Percivaliana* and again the same award on June 6 for a seedling orchid *Lælia* × *Ragotiana*, (*L. grandis* × *L. cinnabarina*). This same day David F. Roy exhibited his seedling canna, Mrs. E. S. Converse, the same variety that was shown by him last year and received Honorable Mention. It is deep red in color and remarkably dwarf and floriferous in habit, and appeared so much better this season than last that we considered it worthy of a First Class Certificate of Merit which was accordingly awarded.

August 1 Oakes Ames exhibited a fine new seedling cypripedium, *C.* × *Chamberlaino-Rothschildianum* for which he was awarded the Society's Silver Medal.

At the Annual Show, September 24, Henry A. Dreer, Inc. was awarded Honorable Mention for two new plants, *Pennisetum macrophyllum atrosanguineum* and *Asparagus myriocladus*. The former although not a hardy plant is one of the most distinct of grasses and its purplish-red foliage should make it a welcome addition to the ornamental varieties. The asparagus is a plant of much promise, but owing to the limited exhibit the committee did not feel justified in giving a higher award at this time and would urge a further display, as there seems to be a question of freedom in growth, which is a prerequisite of commercial value.

J. E. Rothwell brought to the Chrysanthemum Show two fine seedling orchids, one, *Lælia tenebrosa* × *Cattleya Gaskelliana*, resembles its seed parent in form of flower but with the large size of the pollen parent. The color is a clear deep rosy-lilac throughout except the lip which is blotched with a deeper shade. This received a First Class Certificate of Merit. The other, *Lælio-Cattleya Bowring-Clive*, was one of the most remarkable seedlings ever shown before us, and was the result of a cross between *Cattleya Bowringiana* and *Lælio-Cattleya Clive*. The flower is of medium size, of the lælia type, of a clear rosy-lilac in color, with the lip and throat very deep maroon-crimson, prominently marked with a peculiar, crosswise blotch of light yellow, making a most beautiful and unique flower, worthy of the award given it: the Society's Silver Gilt Medal.

On November 14 Mr. Rothwell received a First Class Certificate of Merit for *Lælio-Cattleya Pallas*, (*L. crispa* × *C. Dowiana aurea*). The flowers are of good size with delicate lavender sepals and petals, the lip rich crimson-purple bordered with white. A marked peculiarity in the specimen exhibited was the diversity of markings of the throat in different flowers. In some it was simply blotched with yellow while in others it was shaded and veined.

Beside the special awards for new plants we have made several others for meritorious displays and for superior cultivation.

In the former class we awarded Lager & Hurrell on March 18 a Silver Gilt Medal for a very extensive and beautiful display of orchids, and on November 5 Mrs. John L. Gardner Honorable Mention for a plant of the yellow-flowered solandra, *Solandra lævis*.

For superior cultivation our first award, a Silver Medal, was made to George Melvin, gardener to Col. Charles Pfaff, who showed on January 31 a fine specimen of *Oncidium unguiculatum* carrying two magnificent spikes of bloom five feet in length. He was also awarded on April 11 a Silver Medal for a remarkably well grown plant of *Dendrobium fimbriatum oculatum*, and on October 3 a First Class Certificate of Merit for a plant of *Miltonia candida* carrying forty flowers.

March 7 Peter Murray, gardener to Walter P. Winsor, was awarded the Society's Bronze Medal for a finely grown plant of *Odontoglossum Rossii majus* and on May 23 he was awarded the Silver Medal for a plant of *Cœloggne Dayana* with eleven spikes and about four hundred blooms. The plant had been under his care for about five years and had steadily improved from year to year.

March 18 James Stuart, the grower of the magnificent plants of *Cyclamen Persicum* exhibited by George F. Fabyan, was awarded a Society's Silver Medal.

One other exhibit which we deemed worthy of a special cultural award, the Society's Bronze Medal, was made at the Annual Show, September 24, by Mrs. M. L. Atwood of Bridgewater, Massachusetts. Her display consisted of achimenes grown in the window of her own home and while there was but one variety represented, the exhibit was instructive and served to illustrate the adaptability of this plant for window cultivation.

In reviewing the exhibitions of the year several displays should receive special notice as being of unusual character or excellence. In this connection we would speak of the display made by R. & J. Farquhar & Co. of the Farquhar rose at the Spring Show, March 18. A few plants were shown a year ago and it seemed of such unusual merit that a high award was made it. Their exhibit at this show fully justified the award then made and showed the

remarkable vigor of the variety in a marked manner. In scarcely eighteen months from the time the original plant was purchased they had been able to propagate thousands of small plants beside growing a sufficient number of large ones for this exhibit which were arranged as a decoration for the rear end of the hall and made a complete screen. The older plants beside making a vigorous growth had also produced many flowers, but the younger bore only a few. Evidently the greatest value in this rose lies in its wonderful vigor and its adaptability for covering purposes, for many of the plants shown had made shoots fully twenty feet in length with bright, glossy leaves.

The displays of cyclamens at this same show should also be mentioned, for in many ways they excelled any previous exhibits we have been called upon to examine. We refer particularly to the plants shown by George F. Fabyan and Jason S. Bailey, those of the former being particularly meritorious.

At the Annual Exhibition, September 24-27, the Yamanaka Company made a display of dwarfed trees and miniature gardens. The trees though few in number were exceedingly interesting from their great age, large size, and careful training. The two largest of the group were a pair of retinisporas, (*Retinispora obtusa nana*) and were claimed to be between four and five hundred years old. Considering the extreme slowness of growth peculiar to this variety under the most favorable conditions, the claim can hardly be doubted for the trees were about five feet in height and nearly as broad. The Society's Silver Gilt Medal was awarded for this display.

The crotons were another prominent feature, particularly the large specimens from Mrs. J. W. Tufts.

One of the most interesting displays came from the Harvard Botanic Garden and included many curious species as well as beautiful specimens. Among them we noted a fine collection of nepenthes and as these interesting plants have not been shown at our Annual Exhibition for several years it was gratifying to have them again exhibited.

The displays of orchids were not up to their usual mark, Messrs. Lager & Hurrell furnishing the only exhibit.

At the Chrysanthemum Show the large specimen plants were, as usual, the center of interest and the plants from Herbert Dumaresq, J. S. Bailey, E. S. Converse, E. W. Converse, and E. A. Clark have been seldom, if ever, excelled.

Your committee feels that our chrysanthemum shows are lacking in variety and would call attention to the sameness which seems to characterize them. Some effort should be made to introduce new features, in connection with the old, which will make them more attractive and instructive.

The chrysanthemum is a plant with which an endless variety of artistic decorative effects can be produced and it is in this direction, it seems to us, that a remedy can be found.

July 8, on invitation from J. Tailby & Son, the committee visited their grounds at Wellesley to inspect, as it grows in the field, their hybrid calla, Mrs. Theodore Roosevelt, for which an award was made them last season. We found it growing vigorously, in large numbers, and holding true to the characteristics of the plants shown before us last year, and we feel that the plant is fully worthy of the award made at that time.

For the prizes offered by the Society of American Florists and Ornamental Horticulturists there have been three entries; one by J. Tailby & Son, hybrid calla, Mrs. Theodore Roosevelt; another by D. F. Roy, seedling canna, Mrs. E. S. Converse; and another by Col. Charles Pfaff, seedling pelargonium, Mrs. Charles Pfaff.

We have awarded the first prize, a Silver Medal, to J. Tailby & Son for their hybrid calla, and the second prize, a Bronze Medal, to D. F. Roy for his seedling canna.

We will close our report with a word in appreciation of the displays of large bays, palms, and other decorative plants contributed to all but the last of our large exhibitions by R. & J. Farquhar & Co. These plants were not only fine specimens individually but have been of great value in decorating the hall; their value for this purpose was most keenly felt at the Chrysanthemum Show when we were without them and emphasized the necessity of offering prizes for classes which will fill this want.

We have awarded during the year in prizes and money gratuities			$1,340.00
Four Silver Gilt Medals	@	$10.00	40.00
Eight Silver "	"	5.00	40.00
Three Bronze "	"	3.00	9.00
Estimated cost of lettering and cases for fifteen Medals	"	2.25	33.75
			$1,462.75

Appropriation for plants for 1903	$1,500 00
Amount awarded as above	1.462.75
Unexpended balance	$37.25

We have also awarded thirteen First Class Certificates of Merit and five Honorable Mentions.

PRIZES AND GRATUITIES AWARDED FOR PLANTS.

1903.

January 3.

Primula sinensis.—Six plants in not less than six-inch pots:
1st, Mrs. John L. Gardner, $4.

Primula stellata.—Six plants in not less than six-inch pots:
1st, Mrs. John L. Gardner, $4.

Primula obconica Hybrids.—Six plants in not less than six-inch pots:
2nd, Mrs. John L. Gardner, $3.

Gratuity:—

Mrs. John L. Gardner, *Euphorbia Jacquiniæflora* and *Primula Sinensis alba plena*, $2.

February 7.

Freesias.—Six pots or pans:
1st, Col. Chas. Pfaff, $5.

Gratuities:—

Edward J. Mitton, Display of *Primula Sinensis*, $2.
J. E. Rothwell, Display of Orchids, $5.

March 7

Gratuity: —

Walter P. Winsor. *Odontoglossum triumphans.* $2.

SPRING EXHIBITION.

March 18, 19, 20, 21, 22.

Theodore Lyman Fund.

Indian Azaleas.—Specimen plant, named:
1st, E. W. Breed, $8: 2nd, Wm. S. Ewell & Son, $6.

Society's Prizes.

Orchid.— Single plant:
1st, Jason S. Bailey, $10: 2nd, Walter P. Winsor, $6.

Stove or Greenhouse Plants.—Specimen in bloom other than Azalea or Orchid:
1st, Mrs. John L. Gardner, $8.

Hardy Polyanthuses.— Twelve plants of distinct varieties:
1st, W. Whitman, $6: 2nd, Mrs. John L. Gardner, $4.

Cyclamens.— Ten plants:
1st, Geo. F. Fabyan, $15; 2nd, Geo. F. Fabyan, $12: 3d, Jason S. Bailey, $10.

Ten plants in not over seven-inch pots:
1st, Jason S. Bailey, $8: 2nd, Geo. F. Fabyan, $6: 3d, Jason S. Bailey, $4.

Single plant:
1st, Geo. F. Fabyan, $5: 2nd, Geo. F. Fabyan, $4.

Cinerarias.— Six varieties:
1st, Geo. F. Fabyan, $10; 2nd, Mrs. John L. Gardner, $8: 3d, Edward J. Mitton, $6.

Three varieties:
1st, Geo. F. Fabyan, $6; 2nd, Mrs. John L. Gardner, $5: 3d, Edward J. Mitton, $4.

Single plant:
1st, Mrs. John L. Gardner, $3: 2nd, Geo. F. Fabyan, $2.

Hyacinths.— Twelve named varieties, in pots, one in each pot:
1st, Mrs. John L. Gardner, $8: 2nd, Mrs. John L. Gardner, $5.

Six named varieties, in pots, one in each pot:
1st, Mrs. John L. Gardner, $5; 2nd, Mrs. John L. Gardner, $4.

Single named bulb, in pot:
1st, Mrs. John L. Gardner, $2; 2nd, Mrs. John L. Gardner, $1.
Three pans, not to exceed twelve inches, ten bulbs of one variety in each pan:
1st, Mrs. John L. Gardner, $6.
Two pans, not to exceed twelve inches, ten bulbs of one variety in each pan:
1st, Mrs. John L. Gardner, $4.
Single pan, not to exceed twelve inches, with ten bulbs of one variety:
1st, Mrs. John L. Gardner, $3; 2nd, Mrs. John L. Gardner, $2; 3d, Bussey Institution, $1.

Tulips.— Six eight-inch pans, nine bulbs of one variety in each:
1st, Wm. S. Ewell & Son, $6; 2nd, Bussey Institution, $4; 3d, Wm. S. Ewell & Son, $2.
Three eight-inch pans, nine bulbs of one variety in each:
1st, Bussey Institution, $3; 2nd, Wm. S. Ewell & Son, $2; 3d, Wm. S. Ewell & Son, $1.
Three ten-inch pans, twelve bulbs of one variety in each:
1st, Wm. S. Ewell & Son, $5; 2nd, Bussey Institution, $4; 3d, Wm. S. Ewell & Son, $3.

Polyanthus Narcissus.— Four seven-inch pots, four bulbs in each, distinct varieties:
2nd, Bussey Institution, $3.

Jonquils.— Six pots or pans, not exceeding eight inches, the number of bulbs in each to be at the discretion of the grower:
1st, Wm. Whitman, $4; 2nd, Bussey Institution, $3.

Narcissuses.— Six eight-inch pans, distinct varieties, single or double:
1st, Wm. S. Ewell & Son, $6; 2nd, Bussey Institution, $4.
Three eight-inch pans:
1st, Wm. S. Ewell & Son, $3; 2nd, Bussey Institution, $2.

Lily of the Valley.— Six pots or pans, not exceeding eight inches:
1st, Bussey Institution, $4.

Crocuses.— Three boxes, each eight by twelve inches, three distinct varieties:
1st, Bussey Institution, $3; 2nd, Bussey Institution, $2.

Roman Hyacinths — Six eight-inch pans, ten bulbs in a pan:
1st, Wm. S. Ewell & Son, $4; 2nd, Bussey Institution, $2.

General Display of Spring Bulbs and Plants.— All classes:
1st, Wm. S. Ewell & Son, $30; 2nd, Bussey Institution, $20.

Gratuities:—

James L. Little, *Azalea mollis* and Freesias, $5.
Walter Hunnewell, *Aeuba Japonica* in fruit, and ferns, $10.
Mrs. Quincy A. Shaw, *Crinum Macowani*, $3.

Mrs. A. W. Blake, Group of Amaryllis, $6.
Bussey Institution, Forced Shrubs, $6.
R. & J. Farquhar & Co., display of the Farquhar Rose, $35.
Jason S. Bailey, display of Cinerarias, Cyclamens, Azaleas, and Palms, $18.
Bussey Institution, display of native plants, forced, $15.

May 9.

Indian Azaleas.— Six plants in pots, named:
2nd, Mrs. A. W. Blake, $8.
Single specimen:
1st, Mrs. A. W. Blake, $4.
Calceolarias.— Six varieties, in pots:
1st, Geo. F. Fabyan, $10.
Single plant:
1st, Geo. F. Fabyan, $3; 2nd, Geo. F. Fabyan, $2.
Pelargoniums.— Six named Show or Fancy varieties, in not less than eight-inch pots, in bloom:
1st, Edward J. Mitton, $10.

Gratuities:—

James L. Little, Display of Amaryllis and Streptocarpus, $8.
J. E. Rothwell, Display of Orchids, $15.
Mrs. A. W. Blake, Display of *Clerodendron Thompsonæ*, $5.

May 23.

Gratuity:—

I. E. Coburn, Display of *Trollius Europæus*, $3.

RHODODENDRON EXHIBITION.

June 6. (*Changed from June 5, 6, 7*).

Orchids.— Display, arranged for effect, with foliage plants, in a space eight feet by five feet:
1st, J. E. Rothwell, $25.

Gratuities:—

Mrs. John L. Gardner, *Cypripedium Parishii*, $1.
Lager & Hurrell, Display of Orchids, $15.
Mrs. A. W. Blake, Display of plants, $7.

JUNE 16.

Gratuities: —

Mrs. John L. Gardner, Display of Gloxinias, $10.
Col. Chas. Pfaff, *Odontoglossum lævе*, $2.
W. A. Manda, Inc. Display of Orchids, $15.

SEPTEMBER 12.

Gratuity: —

Col. Chas. Pfaff, *Oncidium incurvum*, $3.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 24, 25, 26, 27. (*Changed from Sept. 10, 11, 12, 13*).

PALMS.— Pair, in pots or tubs not less than eighteen inches in diameter:
1st, Jason S. Bailey, $12.
Pair, in pots not more than fourteen inches in diameter:
1st, Jason S. Bailey, $8; 2nd, A. F. Estabrook, $6.

GREENHOUSE PLANTS.— Best furnished group containing foliage plants of all descriptions, arranged for effect, covering two hundred square feet:
1st, Jason S. Bailey, $50; 2nd, E. S. Converse, $35.
Six Greenhouse or Stove plants, decorative specimens of different named varieties, two Crotons admissible:
1st, Jason S. Bailey, $20.

CENTER PIECE FOR TABLE.— For fifteen covers, living plants, in one receptacle, only one entry admissible:
1st, J. E. Rothwell, $10; 2nd, Edward J. Mitton, $8; 3d, Mrs. E. M. Gill, $6.

FLOWERING GREENHOUSE PLANT.— Single specimen, named:
1st, Jason S. Bailey, $8; 2nd, Mrs. John L. Gardner, $6.

CALADIUMS.— Six named varieties:
2nd, A. F. Estabrook, $6.

FERNS.— Five named varieties, no Adiantums admissible:
1st, Jason S. Bailey, $10; 2nd, A. F Estabrook, $8.
Specimen other than Tree Fern:
1st, Jason S. Bailey, $4; 2nd, A. F. Estabrook, $3.

ADIANTUMS.— Five named varieties:
1st, A. F. Estabrook, $8.

DRACÆNAS.— Six named varieties:
1st, Jason S. Bailey, $8; 2nd, E. S. Converse, $5.

CROTONS.— Twenty-five plants, not less than eighteen named varieties, in not less than six-inch pots:
1st, Edward J. Mitton, $12; 2nd, Jason S. Bailey, $10.
Six named varieties, in not less than eight-inch pots:
1st, Mrs. J. W. Tufts, $10.
BEGONIA REX.— Ten pots of ten varieties:
1st, E. S. Converse, $10.
OUVIRANDRA FENESTRALIS.—
1st. E. S. Converse, $6; 2nd, Mrs. John L. Gardner, $4.

Gratuities: —

R. & J. Farquhar & Co., Collection of Palms and Bays, $15.
J. E. Rothwell, *Cœlogyne Massangeana*, $1.
Edward J. Mitton, Display of Orchids, $8.
Lager & Hurrell, " " " $10.
Wm. B. Roberts, Coleus and Begonia Rex, $4.
Mrs. J. W. Tufts, Crotons, $4.
Mrs. John L. Gardner, Display of plants, $25.
Botanic Garden, Group of plants, $35.
Botanic Garden, Nepenthes, $5.
E. S. Converse, Display of Crotons, Ferns, and Begonias, $7.
Mrs. John L. Gardner, *Asparagus deflexus*, $1.
Mrs. John L. Gardner, *Gonioplebium subauriculatum*, $1.
L. H. Foster, Display of Nephrolepis "Anna Foster," $5.
M. Dinsmore, House grown Begonias, $3.

CHRYSANTHEMUM SHOW.

NOVEMBER 5, 6, 7, 8.

Henry A. Gane, Memorial Fund.

CHRYSANTHEMUMS.— For the best specimen plant of Mrs. Jerome Jones, or any of the sports thereof:
1st, Jason S. Bailey, $5.
For the best specimen plant of Marcia Jones, or any of the sports thereof:
1st, E. S. Converse, $5.

Society's Prizes.

Display of eight named plants, any or all classes, distinct varieties:
1st, Herbert Dumaresq, $60; 2nd, Jason S. Bailey, $45; 3d, E. S. Converse, $35.
Display of ten named plants, any or all classes, distinct varieties, in not exceeding nine-inch pots of ordinary form:
1st, E. S. Converse, $35.

Three Japanese Incurved:
1st, E. W. Converse, $12; 2nd, E. A. Clark, $10.
Three Reflexed, distinct named varieties:
1st, Jason S. Bailey, $12; 2nd, E. A. Clark, $10.
Specimen Japanese Incurved, named variety:
1st, Herbert Dumaresq, $6; 2nd, Jason S. Bailey, $5.
Specimen Reflexed, named variety:
1st, E. S. Converse, $6; 2nd, Herbert Dumaresq, $5.
Specimen Anemone Flowered, named variety:
1st, E. S. Converse, $6; 2nd, Herbert Dumaresq, $5.
Specimen Pompon, named variety:
1st, Herbert Dumaresq, $4; 2nd, E. A. Clark, $3.
Twelve plants, of twelve different varieties, grown to one stem and bloom, in not over six-inch pots, preference being given to plants not more than three feet in height:
1st, E. S. Converse, $8; 2nd, James Nicol, $6; 3d, E. S. Converse, $4.
Six plants grown as above but all of one color, Red:
1st, E. S. Converse, $4; 2nd, James Nicol, $3.
White:
1st, James Nicol, $4; 2nd, James Nicol, $3.
Pink:
1st, E. S. Converse, $4; 2nd, James Nicol, $3.
Yellow:
1st, James Nicol, $4; 2nd, E. S. Converse, $3.
Any other color:
1st, James Nicol, $4; 2nd, E. S. Converse, $3.
Group of Chrysanthemums, arranged for effect, with palms and decorative foliage plants, limited to one hundred square feet:
1st, Mrs. John L. Gardner, $25.

Gratuities: —

Mrs. Geo. S. Harwood, Standard Chrysanthemums, $6.
E. S. Converse, Chrysanthemums, $5.
Lager & Hurrell, Display of Orchids, $15.
R. & J. Farquhar & Co., Display *Begonia Gloire de Lorraine*, $10.
E. W. Converse, Chrysanthemums, $5.
L. H. Foster, Display of Nephrolepis, "Anna Foster," $5.

SOCIETY'S SILVER GILT MEDALS.

Spring Exhibition, March 18-22. Henry A. Dreer, for *Pandanus Sanderi*.
Spring Exhibition, Lager & Hurrell, for Display of Orchids.
Annual Exhibition, September 24–27. Yamanaka Co., for Dwarfed Trees and Miniature Gardens.
Chrysanthemum Show, November 5-8. J. E. Rothwell, for *Lælio-Cattleya Bowring-Clive*.

SOCIETY'S SILVER MEDALS.

January 17. Geo. McWilliam, for *Cypripedium* × *Leeanum* var. G. M. Whitin.

" 31. George Melvin, for Superior Cultivation of *Oncidium unguiculatum*.

February 7. J. E. Rothwell, for *Lælia* × *Yula*.

Spring Exhibition, March 18-22, James Stuart, for Superior Cultivation of *Cyclamen Persicum*.

April 4. M. H. Walsh, for Seedling Rambler Rose, Minnehaha.

" 11. Geo. Melvin, for Superior Cultivation of *Dendrobium fimbriatum oculatum*.

May 23. Peter Murray, for Superior Cultivation of *Cœlogyne Dayana*.

August 1. Oakes Ames, for Seedling Cypripedium, *C.* × *Chamberlaino-Rothschildianum*.

SOCIETY'S BRONZE MEDALS.

February 7. J. E. Rothwell, for Seedling *Cypripedium* × *nanum* var. *Zenobia*.

March 7. Peter Murray, for Superior Cultivation of *Odontoglossum Rossii majus*.

Annual Exhibition, September 24-27. Mrs. M. L. Atwood, for Window Cultivation of Achimenes.

FIRST CLASS CERTIFICATES OF MERIT.

January 3. George McWilliam, for Cypripedium × Hildegarde Lasell.

" 10. George McWilliam, for " × Marion Lasell.

February 7. Henry T. Clinkaberry, for Cattleya × Mrs. Theodore Roosevelt.

March 7. Walter P. Winsor, for Dendrobium × *Rolfeæ*.

" 7. Walter P. Winsor, " " × *Wiganiæ*.

Spring Exhibition, March 18-22. Wm. Thatcher, for Seedling Asparagus.

" " " " M. H. Walsh, for Seedling Rambler Rose, Hiawatha.

May 9. J. E. Rothwell, for Seedling Orchid, *Lælio-Cattleya*.

June 6. J E. Rothwell, for " " *Lælia* × *Ragotiana*.

" 6. David F. Roy, for " Canna, Mrs. E. S Converse.

October 3. George Melvin, for Superior Cultivation of *Miltonia candida*.

Chrysanthemum Show, November 5-8. J. E. Rothwell, for Seedling Orchid *Lælia tenebrosa*.

November 14. J. E. Rothwell, for *Lælio-Cattleya Pallas* × *Cattleya Gaskelliana*.

HONORABLE MENTION.

Spring Exhibition, March 18-22. Walter P. Winsor, for *Adiantum cuneatum* var.

Annual Exhibition, September 24-27. Henry A. Dreer, Inc., for *Pennisetum macrophyllum atrosanguineum.*

Annual Exhibition, September 24-27. Henry A. Dreer, Inc., for *Asparagus myriocladus.*

Chrysanthemum Show, November 5-8. Mrs. John L. Gardner, for *Solandra lævis.*

ARTHUR H. FEWKES,
JAMES WHEELER,
DAVID F. ROY,
ROBERT CAMERON,
ROBERT M. GREY.

Committee on Plants.

REPORT

OF THE

COMMITTEE ON FLOWERS

FOR THE YEAR 1903.

By KENNETH FINLAYSON, Chairman to August 8, and JULIUS HEURLIN, Chairman from August 9 to December 31.[1]

Mr. Finlayson's Report.

Your committee desires to report that although the past season has been unusually dry and somewhat warm in the early part of the summer, followed by unseasonable, cold, and rainy weather, yet, on the whole, commendable effort and enthusiasm have been displayed at the various exhibitions in friendly rivalry in the prize arena.

This in a measure offset the bad effect of the weather and established conclusively the fact that the old spirit of healthy competition is still abroad in the community of floriculturists at least.

The exhibition most affected by the weather conditions was the Rose Show; practically none of the local rose growers participated in it. Had it not been for the large and meritorious display of Miss Sarah B. Fay of Woods Hole, the show, as far as roses were concerned, would have been practically nothing. The manager, M. H. Walsh, at this and the following Saturday exhibitions sustained his wonted reputation as an expert rosarian. At the June show, Miss Fay was awarded a Silver Medal for the new hybrid-perpetual rose, *Soleil d'Or*.

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[1] On account of ill-health Mr. Finlayson was obliged to resign the chairmanship of the committee on August 8 and was succeeded by Mr. Heurlin for the remainder of the year.

On Saturday, February 7, there were two fine, competitive exhibits of orchids entered for No. 11 of the Schedule, and calling for a display of named species and varieties filling not less than twenty bottles.

The first prize, a Silver Gilt Medal, went to Col. Charles Pfaff of South Framingham for an elegant display, splendidly staged, and showing the height of cultural skill; his *Lælia autumnalis* variety being marvellously well done, as well as the cattleyas, oncidiums, dendrobiums, and others.

The second prize, a Silver Medal, was won by J. E. Rothwell of Brookline for a grand collection, mostly consisting of varieties of cypripediums; out of eighty-seven bottles, sixty-one being of this genus. This large proportion of the lady's slipper flower in the display, though of unquestioned merit, militated against the otherwise fine stand.

There was one superb spike of *Phalænopsis grandiflora* in Mr. Rothwell's exhibit which was, doubtless, the best spike of this particular variety ever shown in Boston.

The Spring Exhibition, held March 18 to 22, was notable in some exhibits; particularly in cut orchids from Walter P. Winsor of Fairhaven, Peter Murray, gardener, and from Col. Charles Pfaff, George Melvin, gardener.

Mr. Winsor's exhibit was very comprehensive in species and varieties and was superbly staged. In the collection of one hundred bottles of assorted orchids, twenty-four distinct dendrobiums were noticeable. Mr. Winsor was awarded the first prize, the Silver Gilt Medal.

Not far behind in general merit was Col. Pfaff's exhibit, which was especially strong in lælias, cattleyas, dendrobiums, and other genera. Col. Pfaff received the second prize, the Silver Medal.

Another notable exhibit was that of assorted carnations by Peter Fisher, magnificently grown and staged, to which the honor of the Silver Gilt Medal was given for superior cultivation. All the classes of carnations were keenly competed for and were nearly all of superior quality, plainly indicating the popularity and esteem in which the carnation is held by all growers of cut flowers.

In the rose classes there was but slim competition which is regrettable, as there are few, if any, flowers better calculated to add dignity and splendor to an exhibition than roses when well grown. The few classes in which there was competition, however, were up to any former standard of excellence, reflecting great credit on their exhibitors. Violets, though not a numerous class, evinced praiseworthy rivalry amongst the violet growers, notwithstanding the unusual prevalence last winter of the violet disease.

The May Exhibition, May 9, was not up to the usual standard in the cut-flower classes. Narcissi were entirely wanting, and tulips and other flowers shown were very indifferent in quality, owing, doubtless, to the long spell of dry weather prevailing at the time as well as previous to that date.

The Rhododendron and Peony Shows in June were combined, the majority of the growers favoring such a change on account of the forwardness of the season. During May and the first part of June the weather was uncommonly dry and warm, advancing the flowering season, and was otherwise greatly against good quality of bloom, as evidenced in most of the exhibits. Peonies were fairly well represented in number and passable in quality considering the general drouth. The same statement may be made regarding the rhododendrons, which showed unmistakably the effect of the unfavorable weather, being considerably inferior in quality, on the whole, to those of former years. Notwithstanding these drawbacks, Walter Hunnewell made a very creditable and extensive show of hardy and tender varieties of rhododendrons filling two large tables.

Mrs. A. W. Blake of Brookline also made a good showing of rhododendrons, and others contributed to a more or less degree. In the peony classes exhibits were made by T. C. Thurlow, A. H. Fewkes, Geo. Hollis, and others prominently identified with the culture of this flower. The Blue Hill Nurseries exhibited a grand collection of perennial cut flowers embracing eighty-two varieties. A fine display of cut orchids of various kinds, cattleyas predominating, was staged by Mr. Newell, gardener to Jason S. Bailey.

At the Saturday show, July 11, there was quite an extensive display of very creditable material, though had it been held a week earlier, delphiniums and *Iris Kœmpferi* would doubtless have

been in better condition. The proprietor of the Blue Hill Nurseries made an excellent and extensive exhibition on this occasion, showing his usual good taste in staging the same. M. H. Walsh of Woods Hole showed two new hybrid, rambler roses, one of which, the Lady Gay, was very fine and was awarded a First Class Certificate. It is a very profuse flowerer, rose-pink in color, resembling the Crimson Rambler in habit of growth. The other, for which Honorable Mention was awarded, partook more of the Wichuraiana type in leafage and habit of growth. The single flowers grew in clusters and were of a deep rose color with a whitish center. It is called *La Fiamma*. In the class of named, hardy roses, of not less than twenty-five varieties, Miss Sarah B. Fay was again invincible, carrying all before her in the rose line.

Iris Kæmpferi was well represented, Mrs. J. L. Gardner carrying off the first honors in the iris classes, as well as in the delphinium section, in which she had also a very fine collection.

William Whitman was a close second in the delphinium classes with an almost equally fine collection. T. C. Thurlow and F. A. Blake also made a creditable showing of *Iris Kæmpferi*.

At the exhibition of Saturday, July 25, the Blue Hill Nurseries were again victorious in the general display for effect in a space of thirty or more square feet, filling two large tables with finely arranged and correctly named cut flowers. William Whitman came second with a very meritorious collection in great variety.

Miss Sarah B. Fay exhibited a wonderfully fine display of hybrid roses considering the late date. Hardy aquatics, for some reason or other, were not represented at this show as extensively as they should have been. Mrs. J. L. Gardner won the first prize with a fairly good collection.

At the Saturday exhibition, August 1, there was a fairly representative Saturday show, one of the chief features being a fine exhibit of seasonable orchids put up by Emil Johanssohn, gardener to J. E. Rothwell.

William Whitman staged a very extensive display of named, perennial phloxes in great variety and of good quality, reflecting credit upon Martin Sullivan, the gardener, for his painstaking enterprise in affixing the names as well as in the skill shown in producing such good trusses.

E. L. Lewis and A. F. Estabrook carried off first and second prizes in the order named for very good displays of sweet peas.

On Saturday, August 8, perennial phloxes were shown somewhat extensively and keen competition was evinced between the various contestants, of whom there were quite a number. The several lots being on an almost equal plane of merit made it rather difficult for the judges to place the awards. The results of their careful deliberation will be found in the list of prizes and gratuities following this report. In almost all the exhibits of phloxes were to be seen new varieties of great merit in reference to size of individual flower and fullness of truss.

Mr. Heurlin's Report.

During August and September, dahlias were shown in great profusion, the cactus type still being the leader in popular favor. That this class of flowers will continue in popularity no one who saw the various exhibits can doubt. Probably no finer and better finished flowers than those shown by Walter P. Winsor were ever seen before in the halls.

While gladioli were not shown in as great quantity as formerly, the quality left little to be desired. First Class Certificates were awarded August 15 to Arthur F. Estabrook for Princeps, a brilliant red flower measuring five and one-half inches across; on August 22 to James F. Harlow for Madame Emile Lemoine, a beautiful cream-colored variety, four and one-half inches across; and on August 29 to A. F. Schenkelberger for White Lady, a pure white flower, and, perhaps, the best of all.

Mention should be made of two collections of asters shown August 22 by Mrs. John L. Gardner and William Whitman. This not being a regular prize day for asters adequate rewards could not be given, which we regret, because we never saw a more extensive and varied display of this flower arranged with such taste. There was also exhibited on this date by T. C. Thurlow a collection of some sixty varieties of phloxes, including most of the later French introductions, which was awarded first prize and was a very creditable display.

Chrysanthemums were up to the Boston standard but the variety was not as good as could be wished. It was quite a relief to

look down on E. S. Converse's beautiful Pompons after having strained one's neck for some time in looking up to the giants with their several feet of stem. At future exhibitions, chrysanthemums on long stems should be staged on tables not more than two feet high to give best effect—if for no other reason.

For six introductions of the current year Miss E. Jackson Clark had the only entry taking first prize with these varieties: Cheltoni, Mrs. J. C. Neville, Tancrède de Bastet, W. Duckham, W. A. Etherington, and La Fusion. To the same exhibitor went the prize for "Best Seedling never disseminated" for a pure white variety incurved of the Merza type and of better substance.

It seems to be a fact that the limit in size of flower has been reached and a reaction is setting in towards the more delicate Anemone and Pompon types. A First Class Certificate was awarded to W. A. Manda for Dr. Englehardt, a useful, pink, commercial variety. Carnations were largely staged at this show and M. A. Patten's collection was especially good. Only one entry has been received for the Sears' Prizes, owing undoubtedly to the scale of points by which the aspirants must be judged.

A collection of cannas from R. & J. Farquhar & Co. was given a First Class Certificate. The exhibit consisted of Golden Queen, Golden Leopard, Bridesmaid, Comté le Sach, Hyde Park, and Meteor.

We would recommend the following changes in the Schedule of Prizes:

First: — That three prizes be given for collection of orchids, instead of two, as at present: a Silver Gilt, a Silver, and a Bronze Medal. There are many growers with limited facilities who would be glad to enter for a Bronze Medal not being in positions to compete with the larger growers, nor caring for a gratuity, even if of higher money value than the medal.

Second: — That prizes for marigolds, zinnias, sweet williams, canterbury bells, and "vases" be dropped and the money applied to peonies, hardy phloxes, delphiniums, and irises — German and Japanese mainly.

Third: —That at one exhibition three medals be offered as a first, second, and third prize, instead of money, for hardy, herbaceous flowers and grasses; no restriction to be made as to number of bottles entered.

Out of an appropriation of $1,875 your committee has expended in Prizes and Gratuities $1,325, four Silver Gilt Medals, four Silver Medals, ten First Class Certificates of Merit, and four Honorable Mentions, leaving an unexpended balance of $472.

The following awards have been made during the year:—

PRIZES AND GRATUITIES AWARDED FOR FLOWERS.

1903.

JANUARY 3.

Gratuity:—

Mrs. J. L. Gardner, *Primula Sinensis*, $1.

JANUARY 17.

Gratuity:—

G. McWilliam, Seedling Cypripediums, $4.

FEBRUARY 7.

VIOLETS.—Best collection of varieties, in bunches of fifty blooms each:
1st, N. F. Comley, $4; 3d, Col. C. Pfaff, $2.

Gratuity:—

J. L. Bird, *Acacia pubescens*, $1.

SPRING EXHIBITION.

MARCH 18, 19, 20, 21, 22.

TENDER ROSES IN VASES.—Twelve blooms of American Beauty:
1st, W. H. Elliott, $15; 2d, The Floral Exchange, $12.
Twenty-five blooms of Liberty:
1st, W. H. Elliott, $12.
Twenty-five blooms of any other variety:
1st, Waban Rose Conservatories, Golden Gate, $8; 2d, Waban Rose Conservatories, Ivory, $6.

CARNATIONS.—Vase of one hundred cut blooms, with foliage, not less than six varieties:
1st, M. A. Patten, $8.

Twenty-five blooms of any named Crimson variety:
1st, M. A. Patten, Gov. Roosevelt, $3; 2d, M. A. Patten, Harry Fenn, $2.
Twenty-five blooms of any named Dark Pink variety:
1st, M. A. Patten, Mrs. T. W. Lawson, $3; 2d, L. E. Small, Mrs. T. W. Lawson, $2.
Twenty-five blooms of any named Light Pink variety:
1st, A. Roper, Fair Maid, $3; 2d, M. A. Patten, Fair Maid, $2.
Twenty-five blooms of any named Scarlet variety:
1st, M. A. Patten, J. H. Manley, $3; 2d, L. E. Small, J. H. Manley, $2.
Twenty-five blooms of any named White variety:
1st, M. A. Patten, Gov. Wolcott, $3; 2d, H. A. Stevens Co., Gov. Wolcott, $2.
Twenty-five blooms of any named Yellow Variegated variety:
1st, M. A. Patten, Dorothy Whitney, $3.
Twenty-five blooms of any named White Variegated variety:
1st, M. A. Patten, Prosperity, $3; 2d, S. J. Reuter, Prosperity, $2.

Pansies.—Forty-eight cut blooms, not less than twenty-four varieties:
1st, Mrs. E. M. Gill, $3.

Violets.—Bunch of one hundred blooms of Lady Hume Campbell:
1st, H. F. Calder, $3; 2d, Col. C. Pfaff, $2.
Bunch of one hundred blooms of Marie Louise:
1st, N. F. Comley, $3.
Bunch of one hundred blooms of any other Double variety:
1st, N. F. Comley, Imperial, $3; 2d, N. F. Comley, Neapolitan, $2.
Bunch of one hundred blooms of any Single variety:
1st, N. F. Comley, Princess of Wales, $3; 2d, G. W. Ayer, Princess of Wales, $2.

Gratuities:—

The Floral Exchange, Vase of Rose, Queen of Edgely, $8.
M. A. Patten, Vase of Carnation, Mrs. M. A. Patten, $3.
Little South Floral Co., Vase of Carnation, The Queen, $3.
A. Roper, Vase of Carnation, Fair Maid, $3.
Mrs. E. M. Gill, Display of Cut Flowers, $5.

May 9.

Tulips.—Forty-eight blooms, not less than twelve named varieties:
1st, W. Whitman, $4.

Pansies.—Forty-eight blooms, not less than twenty-four varieties:
1st, J. B. Shmtleff, Jr., $3; 2d, Mrs. E. M. Gill, $2.

Gratuities:—

W. E. Coburn, Hardy Hybrid Primulas, $3.
W. E. Coburn, Pansies, $4.
Col. C. Pfaff, Pelargoniums, $2.
Mrs. E. M. Gill, Display of Cut Flowers, $2.

RHODODENDRON AND PÆONY EXHIBITIONS (combined.)

JUNE 5 AND 6. (*Changed from June 5, 6, and 7, and June 13.*)

H. H. Hunnewell Fund.

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

1st, Mrs. A. W. Blake, $15.

Six distinct varieties of unquestioned hardiness, named:

1st, Mrs. J. L. Gardner, $6.

HARDY AZALEAS.—Fifteen varieties, any or all classes:

2d, T. C. Thurlow, $5.

Twelve varieties, one vase of each.

1st, Mrs. A. W. Blake, $4.

Six varieties, one vase of each:

1st, Mrs. J. L. Gardner, $3.

Society's Prizes.

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

1st, Mrs. J. L. Gardner, $4.

HARDY PYRETHRUMS.—Display of thirty bottles, single and double, six or more varieties:

1st, A. McLaren, $6.

HARDY ORNAMENTAL TREES AND SHRUBS.—Display of not less than thirty species and varieties, named:

1st, Mrs. J. L. Gardner, $8.

VASE OF FLOWERS:

1st, Mrs. E. M. Gill, $3; 2d, Miss H. B. Winter, $2.

HERBACEOUS PÆONIES.—Collection of thirty or more named varieties, double:

1st, W. Whitman, $10; 2d, T. C. Thurlow, $8.

Collection of twelve or more named varieties, single:

1st, T. C. Thurlow, $4.

Vase of blooms on long stems, arranged for effect, in the Society's large China vases:

1st, Mrs. J. L. Gardner, $8; 2d, W. Whitman, $6; 3d, W. J. Clemson, $4.

Gratuities:—

W. Hunnewell, Rhododendrons, $30.
Mrs. A. W. Blake, " $5.
Mrs. J. L. Gardner, Roses and Rhododendrons, $8.

J. S. Bailey, Display of Orchids, $10.
A. H. Fewkes, Display of Pæonies, $5.
E. A. & W. K. Wood, Vase of Oriental Poppies, $2.
T. C. Thurlow, Vase of *Kalmia latifolia*, red variety, $2.
Blue Hill Nurseries, Herbaceous Perennials, $10.
Mrs. E. M. Gill, Cut Flowers, $3.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 16 AND 17. (*Changed from June 23 and 24.*)

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.

Society's Prizes.

Sixteen named varieties, three of each variety:
1st, Miss S. B. Fay, $12.
Twelve named varieties, three of each variety:
1st, Miss S. B. Fay, $10.
Twenty-four named varieties, one of each:
1st, Miss S. B. Fay, $10.
Eighteen named varieties, one of each:
1st, Miss S. B. Fay, $8.
Twelve named varieties, one of each:
1st, Miss S. B. Fay, $6.
Twenty-four blooms of Mme. Gabriel Luizet:
1st, Miss S. B. Fay, $6; 2d, P. B. Bradley, $4.
Six blooms of any other variety:
1st, Miss S. B. Fay, Ulrich Brunner, $3; 2d, Miss S. B. Fay, Clio, $2
General Display.—One hundred bottles of Hardy Roses in the Society's racks:
1st, Miss S. B. Fay, $10; 2d, Mrs. E. M. Gill, $9.

BASKET OF ROSES.—Arranged for effect:
1st, Mrs. E. M. Gill, $5.

SWEET WILLIAMS.—Display of eighteen vases, three trusses each, not less than six varieties:
1st, W. Whitman, $3; 2d, W. E. Coburn, $2; 3d, W. Whitman, $1.

Gratuities:—

Miss S. B. Fay, Display of Roses, $50.
A. H. Fewkes, Display of New Pæonies, $2.
W. Whitman, Display of Sweet Williams and Foxgloves, $3.
Blue Hill Nurseries, Herbaceous Perennials, $5.
Mrs. E. M. Gill, Display of Cut Flowers, $3.
W. H. Heustis, Display of Shrubs, $3.

JULY 11.

HARDY ROSES.—Collection, named, not less than twenty-five varieties, filling fifty vases, one in each vase:
1st, Miss S. B. Fay, $12.

IRIS KÆMPFERI.—Fifteen varieties, three of each, in vases:
1st, Mrs. J. L. Gardner, $6; 2d, T. C. Thurlow, $4.
Six varieties, three of each, in vases:
1st, Mrs. J. L. Gardner, $3: 2d, F. A. Blake, $2.

CAMPANULA MEDIUM.—Collection, not less than fifteen bottles:
1st, W. Whitman, $5.

DELPHINIUMS.—Display, thirty vases of three spikes each:
1st, Mrs. J. L. Gardner, $8; 2d, W. Whitman, $6; 3d, F. A. Blake, $4.

HARDY HERBACEOUS FLOWERS AND GRASSES.—Thirty bottles:
1st, Blue Hill Nurseries, $6: 2d, Blue Hill Nurseries, $5.

VASE OF FLOWERS:
1st, Mrs. E. M. Gill, $4; 2d, Goodell Farm, $3.

Gratuities:—

Miss S. B. Fay, Display of Hardy Roses, $6.
Mrs. J. L. Gardner, *Iris Kæmpferi*, $2.
W. Whitman, Sweet Williams, $1.
Mrs. J. B. Lawrence, Cut Flowers, $2.
Mrs. E. M. Gill, " " $2.
W. Whitman, " " $1.

JULY 18.

VASE OF FLOWERS.—Best arranged:
1st, Mrs. E. M. Gill, $4; 2d, Mrs. W. Winter, $3.

Gratuities:—

Miss S. B. Fay, Display of Hardy Roses, $6.
G. Hollis, Display of Perennial Phloxes, $1.
W. E. Coburn, Hollyhocks, $2.
Blue Hill Nurseries, two large vases of Cut Flowers, $5.
Mrs. E. M. Gill, Display of Cut Flowers, $1.

JULY 25.

HARDY AQUATIC FLOWERS.—Collection, named:
1st, Mrs. J. L. Gardner, $8.

GENERAL DISPLAY.—Arranged for effect, in space of thirty or more square feet:
1st, Blue Hill Nurseries, $6; 2d, W. Whitman, $4.

Gratuities:—

M. H. Walsh, Display of Rose, Lady Gay, $2.
Miss S. B. Fay, Display of Hybrid Roses, $5.
G. Hollis, Perennial Phloxes, $2.
W. Whitman, Hollyhocks, $1.
Mrs. E. M. Gill, Cut Flowers, $3.

AUGUST 1.

SWEET PEAS.—Display of named varieties, filling thirty vases, arranged with their own foliage:
1st, E. L. Lewis, $6; 2d, A. F. Estabrook, $4.

VASE OF FLOWERS.—For table decoration:
1st, Mrs. E. M. Gill, $3; 2d, Mrs. W. Winter, $2.

Gratuities:—

W. Whitman, Sweet Peas, $2.
E. L. Lewis, " " $1.
A. F Estabrook, " " $1.
G. Hollis, Perennial Phloxes, $2.
W. Whitman, Perennial Phloxes and Dahlias, $4.
J. E. Rothwell, Display of Orchids, $7.
Mrs. J. B. Lawrence, Cut Flowers, $1.
J. Thorpe, Cut Flowers, $1.
Blue Hill Nurseries, large vases of Cut Flowers, $6.

AUGUST 8.

PERENNIAL PHLOXES.—Twelve named varieties:
1st, T. C. Thurlow, $5; 2d, G. Hollis, $4.

GENERAL DISPLAY.—Arranged for effect in a space of thirty or more square feet:
1st, Blue Hill Nurseries, $6; 2d, W. Whitman, $4.

Gratuities:—

W. Whitman, Display of Phloxes, $4.
T. C. Thurlow, Perennial Phloxes, $2.
Mrs. G. Duncan, " " $1.

A. McLaren, Seedling Phloxes, $1.
Mrs. E. M. Gill, Display of Cut Flowers, $3.
W. Whitman, Vase of Cut Flowers, $1.

August 15.

Annuals.—General display, named, not less than fifty varieties, filling not less than one hundred and fifty bottles:
1st, Mrs. J. L. Gardner, $8; 2d, E. S. Converse, $6

Gratuities:—

W. G. Winsor, Dahlias, $3.
Mrs. J. B. Lawrence, " $2.
C. Wellington, " $1.
O. B. Hadwen, Gladioli, $1.
Blue Hill Nurseries, Perennial Phloxes, $3.
J. B. Shurtleff, Jr., Marigolds, $1.
Blue Hill Nurseries, two large vases of Cut Flowers, $2.
Mrs. E. M. Gill, Display of Cut Flowers, $3.

August 22.

Perennial Phloxes.—General Display, in not less than thirty vases:
1st, T. C. Thurlow, $6; 2d, G. Hollis, $5; 3d, F. J. Rea, $3.

Gratuities:—

W. G. Winsor, Dahlias, $3.
R. P. Struthers, " $2.
J. S. Chase, " $1.
C. Wellington, " $1.
W. Whitman, Collection of Asters, $5.
Mrs. J. L. Gardner, Collection of Asters and Zinnias, $6.
C. S. Pratt, Gladioli, $2.
J. B. Shurtleff, Jr., Vase of Salpiglossis, $1.
Blue Hill Nurseries, Cut Flowers, $3.
Mrs. E. M. Gill, " " $2.

August 29.

Theodore Lyman Fund.

Asters.—Of all classes, fifty vases, not less than twelve varieties, three flowers in each vase:
1st, E. S. Converse, $6; 2d, Mrs. J. L. Gardner, $5.
Hardy Herbaceous Flowers and Grasses.—Thirty bottles:
1st, Blue Hill Nurseries, $6; 2d, Blue Hill Nurseries, $5.

Gratuities:—

W. G. Winsor, Dahlias, $3.
C. Wellington, " $2.
N. W. T. Knott, " $2.
Mrs. L. Towle, " $1.
C. S. Pratt, Gladioli, $3.
O. B. Hadwen, " $1.
J. B. Shurtleff, Jr., Cannas, $1.
Shady Hill Nursery Co., three Vases of Flowers, $1.
Blue Hill Nurseries, Cut Flowers, $1.
Mrs. E. M. Gill, " " $2.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 24, 25, 26, 27. (*Postponed from September 10-13.*)

Theodore Lyman Fund.

GLADIOLI.—Display of named and unnamed varieties, filling one hundred vases, arranged for effect with any foliage:
1st, C. S. Pratt, $8; 2d, W. P. Lothrop, $6.

Society's Prizes.

DAHLIAS.—Show, eighteen blooms, named varieties:
1st, W. P. Lothrop, $4; 2d, W. C. Winter, $3.
Fancy, eighteen blooms, named varieties:
1st, W. C. Winter, $4; 2d, E. W. Ela, $3.
Cactus, twelve blooms, named varieties:
1st, J. K. Alexander, $4; 2d, E. W. Ela, $3.
Decorative, twelve blooms, named varieties:
1st, W. C. Winter, $3; 2d, W. G. Winsor, $2.
Show, six blooms, named varieties:
1st, W. C. Winter, $2; 2d, W. H. Symonds, $1.
Fancy, six blooms, named varieties:
1st, W. H. Symonds, $2; 2d, W. P. Lothrop, $1.
Best single bloom, of any class, introduction of 1901 or later:
1st, H. F. Burt, Master Carl, $1.
Pompon, twelve vases of three blooms each, named varieties:
1st, W. H. Symonds, $3; 2d, J. K. Alexander, $2.
Single, twelve vases of three blooms each, named varieties:
1st, E. W. Ela, $2; 2d, W. C. Winter, $1.

General Display, one hundred or more bottles, in the Society's racks, arranged for effect:

1st, W. C. Winter, $8; 2d, R. P. Struthers, $6; 3d, W. G. Winsor, $4.

Marigolds.—Display of French and African, filling twenty-five vases:

1st, G. F. Fabyan, $3; 2d, Goodell Farm, $2.

Double Zinnias.—Fifty flowers, not less than twelve varieties:

1st, A. McLaren, $3; 2d, S. H. Symmes, $2.

Hardy Herbaceous Flowers and Grasses.—Thirty bottles:

1st, Blue Hill Nurseries, $6; 2d, Blue Hill Nurseries, $5.

Vase of Flowers.—For table decoration:

1st, Mrs. E. M. Gill, $3; 2d, Miss H. B. Winter, $2.

Gratuities:—

J. E. Rothwell, Collection of Orchids, $5.
M. H. Walsh, Hybrid Tea Rose, Urania and Rambler Rose, Débutante, $5.
N. W. T. Knott, Display of Dahlias, $2.
Mrs. E. M. Gill, " " " $1.
Blue Hill Nurseries, Collection of Phloxes, $2.
F. J. Rea, " " " $1.
Carl Blomberg, Hardy Herbaceous Flowers, $3.
Blue Hill Nurseries, " " " $2.
Blue Hill Nurseries, seven large vases of Cut Flowers, $20.
Mrs. E. M. Gill, Display of Cut Flowers, $2.

CHRYSANTHEMUM SHOW.

November 5, 6, 7, 8.

Josiah Bradlee Fund.

Chrysanthemums.—Twenty-five blooms, of twenty-five distinct varieties, named; a piece of plate or value in money:

1st, Miss E. J. Clark, $18; 2d, E. A. Clark, $12; 3d, E. S. Converse, $8.

Six vases, of six named varieties, ten blooms each:

1st, Miss E. J. Clark, $30.

Henry A. Gane Memorial Fund.

For the best six specimen blooms of Mrs. Jerome Jones or any of the sports thereof:

1st, Col. C. Pfaff, $3; 2d, T. Howden, $2.

Society's Prizes.

Twelve blooms, Incurved, named, in vases:

1st, E. S. Converse, $6.

Twelve blooms, Japanese, named, in vases:
1st, E. A. Clark, $8; 2d, Miss E. J. Clark, $5.
Twelve blooms, Japanese Incurved, named, in vases:
1st, P. W. Moen, $10; 2d, P. B. Robb, $6; 3d, E. A. Clark, $4.
Twelve blooms, Anemone, named, in vases:
1st, E. S. Converse, $6.
Six blooms, Japanese, named, in vases:
1st, P. W. Moen, $6; 2d, E. S. Converse, $4.
Six blooms, Japanese Incurved, named, in vases:
1st, P. W. Moen, $6; 2d, E. S. Converse, $4.
Six blooms, Reflexed, named, in vases:
1st, P. W. Moen, $6; 2d, T. Doliber, $4.
Six blooms, Anemone, named, in vases:
1st, E. S. Converse, $5.
Six best varieties, named, introductions of the current year:
1st, Miss E. J. Clark, $5.
Vase of ten blooms on long stems, Pink, named:
1st, C. D. Sias, Viviand Morel, $10; 2d, Miss E. J. Clark, Viviand Morel, $8
Vase of ten blooms on long stems, Red, named:
1st, E. A. Clark, John Shrimpton, $10; 2d, Miss E. J. Clark, John Shrimpton, $8; 3d, C. D. Sias, John Shrimpton, $6.
Vase of ten blooms on long stems, White, named:
1st, Mrs. R. C. Hooper, Timothy Eaton, $10; 2d, Miss E. J. Clark, Merza, $8, 3d, C. D. Sias, Merza, $6.
Vase of ten blooms on long stems, Yellow, named:
1st, T. Howden, Col. D. Appleton, $10; 2d, Mrs. R. C. Hooper, Col. D. Appleton, $8; 3d, E. A. Clark, Col. D. Appleton, $6.
Vase of ten blooms on long stems, any other color, named:
1st, H. Dumaresq, Lady Hanham, $10; 2d, Miss E. J. Clark, Kate Broomhead, $8; 3d, C. D. Sias, Kate Broomhead, $6.
Best Seedling, never disseminated, six blooms:
Miss E. J. Clark, $5.

Gratuities:—

T. Doliber, Display of Chrysanthemums, $20.
F. S. Moseley, " " " $10.
Mrs. E. M. Gill, " " " $8.
E. A. Clark, " " " $4.
Peter Fisher, Carnation, Nelson Fisher, $2.
A. Roper, Vase of Carnation, Fair Maid, $2.
M. A. Patten, Collection of Carnations, $10.
F. S. Moseley, Centrepiece of Carnations, $5.
Mrs. M. W. Peirce, Collection of Carnations, $3.

SOCIETY'S SILVER GILT MEDALS

February 7. Col. C. Pfaff, first prize for display of Orchids, named species and varieties, filling not less than twenty bottles.

Spring Exhibition, March 18–22. W. P. Winsor, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Peter Fisher, for Display of Superior Carnations.

Chrysanthemum Show, November 5–8. Col. C. Pfaff, first prize for Orchids, named species and varieties, filling not less than twenty bottles.

KELWAY SILVER GILT MEDAL.

Rhododendron and Pæony Exhibition, June 6 and 7. T. C. Thurlow, first prize for Collection of Herbaceous Pæonies, eighteen named varieties, single or double.

SOCIETY'S SILVER MEDALS.

February 7. J. E. Rothwell, second prize for Orchids, named species and varieties, filling not less than twenty bottles.

Spring Exhibition, March 18–22. Col. C. Pfaff, second prize for Orchids, named species and varieties, filling not less than twenty bottles.

Rose and Strawberry Exhibition, June 16 and 17. Miss S. B. Fay, for Rose, Soleil d' Or.

Chrysanthemum Show, November 5–8. E. S. Converse, for Collection of Pompon Chrysanthemums.

FIRST CLASS CERTIFICATES OF MERIT.

Rose and Strawberry Exhibition, June 16 and 17. Blue Hill Nurseries, for *Incarvillea Delavayi*.

July 11. M. H. Walsh, for new hybrid Rambler Rose, Lady Gay.

August 8. Blue Hill Nurseries, for new Phlox, Blue Hills.

August 15. A. F. Estabrook, for Gladiolus, Princeps.

August 22. J. F. Harlow, for Gladiolus, Madame Emile Lemoine.

August 29. A. F. Schenkelberger, for Gladiolus, White Lady.

Chrysanthemum Show, November 5–8. W. A. Manda, for Chrysanthemum, Dr. Englehardt.

John Breitmeyer's Sons, for Seedling Hybrid Tea Rose.

Peter Fisher, for Carnation, Mrs. M. A. Patten.

R. & J. Farquhar & Co., for Collection of New Cannas.

HONORABLE MENTION.

Spring Exhibition, March 18–22. G. E. Buxton, for Seedling Carnation, Marion Patten Buxton.

April 4. M. H. Walsh, for Seedling Rose, Urania.

July 11. M. H. Walsh, for Seedling Rose, La Fiamma.

Annual Exhibition of Plants and Flowers, September 24–27. J. W. Clark, for Seedling Gladiolus.

JULIUS HEURLIN,
KENNETH FINLAYSON,
MICHAEL H. NORTON,
WILLIAM NICHOLSON,
ELIJAH A. WOOD,
} *Committee on Flowers.*

REPORT

OF THE

COMMITTEE ON FRUITS

FOR THE YEAR 1903.

By E. W. WOOD, Chairman.

The weather conditions have been unfavorable for the growth of the fruits of New England the past season, apples suffering least, peaches, strawberries, and cherries most. The apple crop, considering it was the "off" year, was unusually abundant; the market has been fairly well supplied, and a larger quantity has been exported than on any previous odd calendar year.

Strawberries were in most places an exceptionally light crop. Late frosts destroyed the early bloom and severe drouth in May and early June, where there were no facilities for irrigation, unfavorably affected the later blossoms. A much smaller quantity of fruit was shown at the Strawberry Exhibition than usual, as a result of the smaller quantity grown and a heavy rain falling the afternoon before the show, making it difficult to obtain perfect specimens for exhibition. William H. Monroe from Beverly has shown each year for the past three years the week following the exhibition a large, handsome berry named Commonwealth. He has never been able to pick ripe fruit to show at the regular exhibition, which would seem to make it a desirable late variety.

All the varieties of fruit for which premiums were offered have been shown during the weekly exhibitions, though in smaller quantity than usual. The blossom buds on the peach trees were

nearly all killed during the winter, and a less quantity of fruit was shown than for several years past. Of cherries a single dish was the only representative of that fruit, the blossoms being killed by frost.

There was a full bloom on the pear trees but owing to cold, wet weather there was an imperfect set of fruit and not more than from one-half to two-thirds the usual crop. Some fine specimens were shown at the later exhibitions. The exhibitions show a continued decrease in varieties grown, especially by those who grow for market; some of the former old and well-known varieties have almost entirely disappeared from the exhibitions. No new fruits have been shown requiring special mention.

Mrs. A. E. Monblo of Malden has shown at several exhibitions a very handsome fruit under the name of India Raspberry, which has attracted much attention from visitors. Under her cultivation it has proved more productive and has sold readily in Boston market for more than double the price of strawberries in their season. She continued to pick the fruit from the last of July until the green fruit and blossoms were killed by frost. It is not a new fruit but is grown in different countries under different names. It is usually catalogued in the United States as the Strawberry Raspberry, though there seems to be little to ally it with the strawberry, as the plants grow in bush form three or four feet in height with remarkably handsome, glossy-green foliage, in form resembling that of the rose.

The appropriation for fruits was $1,275. The Committee has awarded in Prizes and Gratuities $964, one Silver and one Bronze Medal.

PRIZES AND GRATUITIES AWARDED FOR FRUITS.

1903.

SPRING EXHIBITION.

March 18, 19, 20, 21, 22.

Gratuities:—

W. H. Spooner, Wagener Apples, $1.
Goodell Farm, Rhode Island Greening Apples, $1
M. W. Chadbourne, Collection of Apples, $2.

RHODODENDRON AND PÆONY EXHIBITIONS (combined.)

JUNE 6 AND 7. (*Changed from June 5, 6, and 7, and June 13.*)

Gratuity:—

W. Heustis & Son, Marshall Strawberries, $2.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 16 AND 17. (*Changed from June 23 and 24.*)

Theodore Lyman Fund.

STRAWBERRIES.—Four quarts of any variety:

1st, G. V. Fletcher, Marshall, the Lyman Plate, value $15; 2d, W. J. Clemson, Marshall, the Lyman Plate, value $12; 3d, W. Heustis & Son, Belmont, the Lyman Plate, value $10; 4th, G. F. Wheeler, Minute Man, the Lyman Plate, value $8.

Regular Prizes.

For the largest and best collection, not less than fifteen baskets of two quarts each, and not less than five varieties:

2d, G. F. Wheeler, $10.

Ten baskets, not less than three varieties, two quarts each:

1st, G. V. Fletcher, $10; 2d, I. E. Coburn, $8.

Five baskets of one variety, two quarts each:

1st, G. V. Fletcher, Marshall, $6; 2d, G. F. Wheeler, Minute Man, $5; 3d, G. F. Wheeler, Sample, $4.

Two quarts of Belmont:

1st, I. E. Coburn, $3.

Brandywine:

1st, E. S. Converse, $3.

Bubach:

1st, G. V. Fletcher, $3; 2d, I. E. Coburn, $2.

Clyde:

3d, G. F. Wheeler, $1.

Haverland:

1st, I. E. Coburn, $3.

Jessie:

1st, I. E. Coburn, $3.

Marshall:

1st, G. V. Fletcher, $3; 2d, P. B Bradley, $2.

Miner's Prolific:
2d, G. F. Wheeler, $2.
Nick Ohmer:
1st, W. Heustis & Son, $3; 2d, E. S. Converse, $2; 3d, I. E. Coburn, $1.
Sample:
1st, E. S. Converse, $3; 2d, W. Heustis & Son, $2; 3d, I. E. Coburn, $1.
Any other variety:
1st, B. M. Smith, Salem, $3; 2d, I. E. Coburn, New York, $2; 3d, L. C. Weathers, Weathers, $1.
One quart of any new variety not previously exhibited:
1st, B. M. Smith, Governor Rollins, $3.

FOREIGN GRAPES.—Two bunches of any variety:
1st, Mrs. R. M. Clark, $5; 2d, E. S. Converse, $3.

Gratuity:—

P. B. Bradley, Nectarines, $2.

JULY 11.

STRAWBERRIES.—Two quarts of any variety:
1st, W. H. Monroe, Commonwealth, $3; 2d, W. Heustis & Son, Belmont, $2.

Gratuities:—

Miss Vera Chapell, Cherries, $1.
W. J. Clemson, Currants, $1.
W. J. Clemson, Gooseberries, $1.
Mrs. E. J. Cutter, Raspberries, $1.

JULY 18.

RASPBERRIES.—Two quarts of any variety:
1st, Mrs. E. J. Cutter, Cuthbert, $3.

BLACKCAPS.—Two quarts of any variety:
1st, E. S. Converse, $2.

CURRANTS.—Two quarts of any Red variety:
1st, E. S. Converse, $3; 2d, Mrs. E. M. Gill, $2; 3d, W. J. Clemson, $1.
Two quarts of any White variety:
1st, J. S. Chase, $3.

GOOSEBERRIES.—Two quarts of any variety of American origin:
1st, J. S. Chase, Triumph, $3; 2d, W. G. Kendall, Columbus, $2; 3d, W. G. Kendall, Chatauqua, $1.

JULY 25.

RASPBERRIES.—Two quarts of any variety:
1st, Mrs. E. J. Cutter, $3.
CURRANTS.—Two quarts of any Red variety:
2d, Mrs. E. M. Gill, $2.
GOOSEBERRIES. — Two quarts of any Foreign variety.
1st, J. S. Chase, Whitesmith, $3; 2d, W. G. Kendall, Industry, $2.

Gratuity:—

E. S. Converse, Collection of Foreign Grapes, $3.

AUGUST 1.

APPLES.—Yellow Transparent:
1st, E. S. Converse, $3; 2d, J. S. Chase, $2; 3d, G. L. Brown, $1.
PEARS.—Summer Doyenne:
1st, E. S. Converse, $3; 2d, W. Fenno, $2.

Gratuity:—

W. J. Clemson, Blackberries, $1.

AUGUST 8.

APPLES.—Red Astrachan:
1st, W. Fenno, $3; 2d, Dr. E. A. Mayell, $2; 3d, W. J. Clemson, $1.
Sweet Bough:
1st, Mrs. A. E. Underwood, $3; 2d, F. W. Damon, $2; 3d, W. Heustis & Son, $1.
Any other variety:
1st, G. V. Fletcher, Williams, $3; 2d, J. C. Stone, Williams, $2; 3d, M. W. Chadbourne, Williams, $1.
PEARS.—Giffard:
1st, W. Fenno, $3; 2d, F. W. Damon, $2; 3d, J. L. Bird, $1.
Any other variety:
1st, E. S. Converse, Bloodgood, $3; 2d, G. V. Fletcher, Clapp's Favorite $2; 3d, W. Fenno, Osband's Summer, $1.
BLACKBERRIES.—Two quarts of any variety:
1st, M. W. Chadbourne, $3; 2d, W. J. Clemson, $2; 3d, A. Low, $1.
PEACHES.—Open culture, any variety:
1st, D. L. Fiske, $3.

Gratuity:—

D. L. Fiske, Plums, $1.

AUGUST 15.

APPLES.— Oldenburg:
1st, J. L. Bird, $3; 2d, A. Low, $2.
Any other variety:
1st, M. W. Chadbourne, Williams, $3; 2d, J. C. Stone, Williams, $2; 3d, G. V. Fletcher, Williams, $1.
PEARS.—Clapp's Favorite:
1st, F. W. Damon, $3; 2d, E. Torrey, $2; 3d, W. Heustis & Son, $1.
Any other variety:
1st, W. Fenno, Giffard, $3; 2d, F. W. Damon, Giffard, $2.
PEACHES.—Twelve specimens, of outdoor culture, of any variety:
1st, D. L. Fiske, $3; 2d, A. Low, $2.
Six specimens of cold house or pot culture, of any variety:
1st, Mrs. J. C. Whitin, Crimson Garland, $3; 2d, E. S. Converse, Noblesse, $2.
BLACKBERRIES.—Two quarts of any variety:
1st, M. W. Chadbourne, $3; 2d, A. Low, $2.
PLUMS.—Japanese, any variety:
1st, D. L. Fiske, Abundance, $3; 2d, G. D. Monroe, Burbank, $2
NECTARINES.—Orchard house culture, twelve specimens:
1st, Mrs. J. C. Whitin, Pine Apple, $4.
FOREIGN GRAPES.—Two bunches of any variety:
1st, Mrs. J. C. Whitin, Golden Queen, $4.

AUGUST 22.

APPLES.—Chenango:
1st, E. E. Cole, $3; 2d, G. L. Brown, $2.
Summer Pippin:
1st, W. Fenno, $3.
Williams:
1st, V. Frost, $3; 2d, J. C. Stone, $2; 3d, G. V. Fletcher, $1.
Any other variety:
1st, W. Heustis & Son, Gravenstein, $3; 2d, W. Fenno, Sops of Wine, $2; 3d, M. W. Chadbourne, Porter, $1.
PEARS.—Rostiezer:
1st, E. S. Converse, $3.
Tyson:
1st, C. F. Curtis, $3; 2d, A. T. Brown, $2; 3d, J. L. Bird, $1.
Any other variety:
1st, F. W. Damon, Clapp's Favorite, $3; 2d, A. T. Brown, Bartlett, $2; 3d, E. S. Converse, Clapp's Favorite, $1.
PEACHES.—Any variety:
1st, F. H. Evans, Carman, $3; 2d, D. L. Fiske, Mamie Ross, $2; 3d, D. L. Fiske, Coolidge's Favorite, $1.

Plums, Japanese.—Abundance:
2d, D. L. Fiske, $2.
Burbank:
1st, G. D. Moore, $3; 2d, D. L. Fiske, $2.
Any other variety:
1st, F. W. Damon, Bradshaw, $3; 2d, G. V. Fletcher, Bradshaw, $2; 3d, D. L. Fiske, White Kelsey, $1.

August 29.

Apples.—Foundling:
2d, C. M. Handley, $2.
Gravenstein:
1st, W. Heustis & Son, $3; 2d, G. D. Moore, $2.
Porter:
1st, C. M. Handley, $3; 2d, W. Heustis & Son, $2; 3d, G. V. Fletcher, $1.
Any other variety:
1st, E. E. Cole, Alexander, $3; 2d, E. E. Cole, Chenango, $2; 3d, W. Fenno, Summer Pippin, $1.
Pears.—Bartlett:
1st, W. Milman, $3; 2d, V. Frost, $2; 3d, S. S. Symmes, $1.
Any other variety:
1st, W. Fenno, Flemish Beauty, $3; 2d, M. W. Chadbourne, Flemish Beauty, $2; 3d, M. W. Chadbourne, Boussock, $1.
Peaches.—Single dish, of any variety:
1st, F. H. Evans, Carman, $3; 2d, D. L. Fiske, Champion, $2.
Plums.—Any variety:
1st, E. L. Lewis, White Kelsey, $3; 2d, S. S. Symmes, Burbank, $2; 3d, G. D. Moore, Burbank, $1.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS AND OCTOBER EXHIBITION OF FRUITS AND VEGETABLES (combined.)

September 24, 25, 26, 27. *(Changed from September 10–13 and October 3.)*

Theodore Lyman Fund.

For the heaviest and best ripened bunch of any Foreign Black Grape, not less than six pounds:
1st, Miss E. J. Clark, a Silver Medal; 2d, Miss E. J. Clark, a Bronze Medal.

Society's Prizes.

Apples.—Fall Orange or Holden:
1st, W. A. Green, $3; 2d, C. M. Handley, $2.
Foundling:
2d, C. M. Handley, $2.
Garden Royal:
2d, C. B. Travis, $2.
Gravenstein:
1st, Mrs. A. E Underwood, $3; 2d, W. Heustis & Son, $2; 3d, J. B. Shurtleff, Jr., $1.
Hubbardston:
1st, C. C. Shaw, $3; 2d, M. W. Chadbourne, $2; 3d, C. M. Handley, $1.
Mackintosh:
1st, F. J. Kinney, $3; 2d, C. C. Shaw, $2: 3d, G. V. Fletcher, $1.
Maiden's Blush:
1st, W. Fenno, $3; 2d, H. W. Anderson, $2.
Mother:
1st, C. C. Shaw, $3.
Porter:
1st, Mrs. A. E. Underwood, $3; 2d, W. Heustis & Son, $2: 3d, C. M. Handley, $1.
Red Bietigheimer:
2d, M. Sullivan, $2.
Sutton:
1st, A. E. Hartshorn, $3.
Washington Strawberry:
1st, F. J. Kinney, $3; 2d, A. E. Hartshorn, $2; 3d, W. Fenno, $1.
Wealthy:
1st, J. S. Hodge, $3; 2d, H. W. Anderson, $2; 3d, C. M. Handley, $1.
Any other variety:
1st, E. E. Cole, Alexander, $3; 2d, W. A. Green, 20 Oz., $2; 3d, A. E. Hartshorn, Rhode Island Greening, $1.
Crab Apples.—Transcendent, twenty-four specimens:
1st, Miss L. F. Wiggin, $2.
Any other variety:
1st, W. H. Teele, Hyslop, $2; 2d, A. E. Hartshorn, Hyslop, $1.
Pears.—Bartlett:
1st, V. Frost, $3; 2d, G. V. Fletcher, $2: 3d, J. B. Shurtleff, Jr., $1.
Hardy:
1st, A. K. Gould, $3; 2d, C. F. Curtis, $2; 3d, Mrs. E. M. Gill, $1.
Paradise of Autumn:
1st, W. Milman, $3; 2d, W. Heustis & Son, $2; 3d, W. Fenno, $1.
Souvenir du Congrès:
1st, W. Fenno, $3: 2d, C. F. Curtis, $2.

Any other variety:
1st, C. W. Libby, Flemish Beauty, $3; 2d, W Fenno, Flemish Beauty, $2; 3d, C. F. Curtis, Boussock, $1

Peaches.—Crosby:
2d, A. Low, $2.
Oldmixon Freestone:
1st, D. L. Fiske, $3.
Stump the World:
2d, D. L. Fiske, $2.
Any other variety:
1st, D. L. Fiske, $3.

Plums.—Imperial Gage:
1st, E. S. Converse, $3; 2d, J. B. Shurtleff, Jr., $2.
Lombard:
1st, G. V. Fletcher, $3.
Any other variety:
1st, G. V. Fletcher, Bradshaw, $3.

Foreign Grapes.—Two bunches of Black Alicante:
1st, Miss E. J. Clark, $5.
Lady Downs:
1st, Miss E. J. Clark, $5.
Muscat of Alexandria:
1st, Miss E. J. Clark, $5.
Any other variety:
1st, Miss E. J. Clark, $5; 2d, Miss E. J. Clark, $4; 3d, Miss E. J. Clark, $3.

Native Grapes.—Six bunches of Campbell's Early:
1st, L. Darling, $3.
Moore's Early:
1st, F. W. Damon, $3.
Any other variety:
1st, C. W. Libby, Diamond, $3; 2d, F. W. Damon, Concord, $2; 3d, C. W. Libby, Hartford Prolific, $1.

Samuel Appleton Fund.

Apples.—Baldwin:
1st, E. E. Cole, $3; 2d, G. V. Fletcher, $2; 3d, A. E. Hartshorn, $1.
Hubbardston:
1st, C. C. Shaw, $3; 2d, M. W. Chadbourne, $2.

Pears.—Bosc:
1st, W. Wheeler, $3; 2d, F. E. Coolidge, $2; 3d, C. F. Curtis, $1.
Sheldon:
1st, F. E. Coolidge, $3; 2d, S. S Symmes, $2; 3d, A. T. Brown, $1.

Benjamin V. French Fund.

APPLES.—Gravenstein:

1st, W. Heustis & Son, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, W. A. Green, $1.

Rhode Island Greening:

1st, A. E. Hartshorn, $3; 2d, G. V. Fletcher, $2: 3d, C. C. Shaw, $1.

Marshall P. Wilder Fund.

PEARS.—Anjou:

1st, A. T. Brown, $3; 2d, W. Milman, $2; 3d, G. V. Fletcher, $1.

Bartlett:

1st, W. H. Derby, $3; 2d, G. V. Fletcher, $2; 3d, W. A. Green, $1.

GRAPES.—Concord, twelve bunches:

1st, G. V. Fletcher, $3; 2d, J. S. Chase, $2.

Worden:

1st, J. S. Chase, $3.

Theodore Lyman Fund.

APPLES.—Fall Orange or Holden:

1st, W. A. Green, $3; 2d, C. M. Handley, $2.

Fletcher Russet:

1st, G. V. Fletcher, $3; 2d, E. R. Teele, $2; 3d, C. F. Curtis, $1.

Maiden's Blush:

1st, W. Fenno, $3; 2d, H. R. Kinney, $2; 3d, W. C. Winter, $1.

Mother:

1st, H. R. Kinney, $3; 3d, W. C. Winter, $1.

Porter:

1st, C. M. Handley, $3; 2d, W. Heustis & Son, $2; 3d, J. C. Stone, $1.

Pound Sweet:

1st, G. V. Fletcher, $3; 2d, G. D. Clapp, $2.

Sutton:

1st, E. M. Bruce, $3; 2d, A. E Hartshorn, $2.

Palmer or Washington Royal:

2d, A. E. Hartshorn, $2.

Wealthy:

1st, H. W. Anderson, $3; 2d, M. Sullivan, $2; 3d, C. M. Handley, $1.

Any other variety:

1st, A. E. Hartshorn, Washington Strawberry, $3: 2d, W. A. Green, 20 Oz., $2; 3d, M. Martin, Reliance, $1.

Regular Prizes.

PEARS.—Angouleme:

1st, W. H. Derby, $3; 2d, C. F. Curtis, $2; 3d, A. T. Brown, $1.

Clairgeau:

1st, F. W. Damon, $3; 2d, C. F. Curtis, $2; 3d, J. S. Chase, $1.

Comice:
1st, J. L. Bird, $3; 2d, A. T. Brown, $2; 3d, F. W. Damon, $1.
Dana's Hovey:
1st, F. W. Damon, $3; 2d, G. V. Fletcher, $2; 3d, A. T. Brown, $1.
Diel:
1st, A. T. Brown, $3; 2d, G. F. Pierce, $2; 3d, F. W. Damon, $1.
Fulton:
1st, E. S. Converse, $3; 2d, J. L. Bird, $2.
Hardy:
1st, C. F. Curtis, $3; 2d, W. Fenno, $2; 3d, E. S. Converse, $1.
Howell:
1st, W. Fenno, $3.
Josephine of Malines:
1st, J. L. Bird, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, W. Fenno, $1.
Lawrence:
1st, Mrs. C. D. Hodges, $3; 2d, A. T. Brown, $2; 3d, W. Fenno, $1.
Louise Bonne of Jersey:
1st, A. T. Brown, $3; 2d, Mrs. C. Whittier, $2; 3d, C. F. Curtis, $1.
Marie Louise:
1st, E. Torrey, $3; 2d, A. T. Brown, $2; 3d, C. E. Swain, $1.
Merriam:
1st, C. F. Curtis, $3; 2d, F. W. Damon, $2; 3d, J. L. Bird, $1.
Onondaga:
1st, J. L. Bird, $3; 2d, W. Fenno, $2; 3d, C. B. Travis, $1.
Seckel:
1st, W. Milman, $3; 2d, S. S. Symmes, $2; 3d, G. V. Fletcher, $1.
Superfin:
1st, F. W. Damon, $3; 2d, E. B. Wilder, $2; 3d, J. L. Bird, $1.
Urbaniste:
1st, J. L. Bird, $3; 2d, E. S. Converse, $2; 3d, A. T. Brown, $1.
Any other variety:
1st, J. C. Stone, Flemish Beauty, $3; 2d, C. E. Swain, Boussock, $2; 3d, M. W. Chadbourne, Langelier, $1.

QUINCES.—Any variety:
1st, G. V. Fletcher, Rea, $3; 2d, G. V. Fletcher, Orange, $2; 3d, J. S. Chase, $1.

PEACHES.—Crawford's Late:
1st, W. J. Clemson, $3.
Any other variety:
1st, D L. Fiske, Elberta, $3.

PLUMS.—Yellow Egg:
1st, G. V. Fletcher, $2.
Any other variety:
1st, J. B. Shurtleff, Jr., $2.

NATIVE GRAPES.—Six bunches of Brighton:
3d, C. W. Libby, $1.

Delaware:
1st, J. S. Chase, $3; 2d, C. W. Libby, $2; 3d, W. J. Clemson, $1.
Herbert:
1st, C. W. Libby, $3.
Niagara:
1st, C. W. Libby, $3; 2d, W. J. Clemson, $2; 3d, J. S. Chase, $1.
Pocklington:
1st, C. W. Libby, $3; 2d, F. W. Damon, $2.
Any other variety:
1st, C. W. Libby, $3.
Cranberries.—Half-peck:
1st, S. P. Chase, $3.

Gratuities:—

J. L. Bird, Collection of Pears, $3.
E. B. Wilder, " " " $3.
M. W. Chadbourne, " " " $1.
Goodell Farm, Collection of Apples, $1.
Mrs. A. E. Monblo, India Raspberry, $2.

CHRYSANTHEMUM SHOW.

November 5, 6, 7, 8.

Benjamin V. French Fund.

Apples.—Baldwin:
1st, J. C. Stone, $3; 2d, C. C. Shaw, $2; 3d, C. F. Boyden, $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, W. Fenno, $3.
Fameuse:
1st, E. E. Cole, $3; 2d, E. M. Bruce, $2.
Fletcher Russet:
1st, G. V. Fletcher, $3; 2d, C. F. Curtis, $2; 3d, C. M. Handley, $1.
Hubbardston:
1st, C. C. Shaw, $3; 2d, Mrs. F. B. Davidson, $2; 3d, W. Fenno, $1.
Hunt Russet:
1st, C. F. Boyden, $3.

Jacob's Sweet:
1st, M. Martin, $3.
Lady's Sweet:
1st, E. E. Cole, $3; 2d, C. C. Shaw, $2.
Mackintosh:
1st, J. F. Stott, $3; 2d, E. M. Bruce, $2; 3d, G. V. Fletcher, $1.
Northern Spy:
1st, E. M. Bruce, $3; 2d, S. R. Smith, $2; 3d, G. V. Fletcher, $1.
Roxbury Russett:
1st, C. F. Boyden, $3; 2d, A. E. Hartshorn, $2; 3d, E. E. Cole, $1.
Tolman's Sweet:
1st, E. E. Cole, $3; 2d, G. V. Fletcher, $2; 3d, Mrs. A. E. Underwood, $1.
Tompkins King:
1st, E. M. Bruce, $3.
Any other variety:
1st, J. Parker, Bellflower, $3; 2d, W. A. Green, 20 Oz., $2; 3d, E. M. Bruce, Sutton Beauty, $1.

PEARS.—Angouleme:
1st, E. Torrey, $3; 2d, W. H. Derby, $2; 3d, F. W. Damon, $1.
Anjou:
1st, W. Milman, $3; 2d, F. W. Damon, $2; 3d, Miss M. B. Mendum, $1.
Bosc:
1st, G. V. Fletcher, $3; 2d, A. K. Gould, $2; 3d, C. E. Swain, $1.
Clairgeau:
1st, W. J. Wheeler, $3; 2d, F. W. Damon, $2; 3d, C. F. Curtis, $1.
Comice:
1st, J. L. Bird, $3; 2d, A. T. Brown, $2; 3d, W. Fenno, $1.
Dana's Hovey:
1st, W. G. Kendall, $3; 2d, F. W. Damon, $2; 3d, G. V. Fletcher, $1.
Diel:
1st, A. K. Gould, $3; 2d, F. W. Damon, $2; 3d, A. T. Brown, $1.
Josephine of Malines:
1st, W. Fenno, $3; 2d, J. L. Bird, $2.
Lawrence:
1st, W. Fenno, $3; 2d, F. W. Damon, $2; 3d, W. A. Green, $1.
Vicar:
1st, E. S. Converse, $3; 2d, A. T. Brown, $2; 3d, J. L. Bird, $1.
Any other variety:
1st, E. A. Hall, Glout Morceau, $3; 2d, W. Milman, Mt. Vernon, $2; 3d, F. W. Damon, Seckel, $1.

QUINCES.—Any variety:
1st, G. V. Fletcher, Champion, $3; 2d, G. V. Fletcher, Orange, $2; 3d, J. S. Chase, Champion, $1.

Gratuities:—

W. Fenno, Collection of Apples and Pears, $2.
M. W. Chadbourne, " " " " " $1.
C. P. Trowbridge, Cranberries, $1.
C. P. Trowbridge, " $1.
H. F. Gowell, " $1.

E. W. Wood,
Charles F. Curtis,
Warren Fenno,
J. Willard Hill,
George F. Pierce,
John L. Bird,
Frederick W. Damon.

Committee on Fruits.

REPORT

OF THE

COMMITTEE ON VEGETABLES

FOR THE YEAR 1903.

By WARREN HOWARD HEUSTIS, Chairman.

Your committee has to report that the exhibitions of the past year have been very well sustained and well up to the usual high standard of this Society. While occasionally we have new varieties of vegetables it is quite hard to improve on existing sorts.

At the winter shows the lettuce was remarkably heavy and reminded us of that grown in summer in the open, which indicates that the greenhouse business is each year getting nearer perfection.

At the Spring Exhibition there was a very large and instructive exhibition of seedling potatoes by Hon. Aaron Low of Hingham, which attracted much attention from visitors. It consisted of from fifty to seventy-five varieties from one to five years from the seed ball to maturity. It takes from three to five years of cultivation to determine the value of varieties from the seed, as many of them are not worthy of retaining. Quite a number of the varieties which have been tested for five years promise to be of superior value in productiveness and quality. The varieties one year from the seed ball showed much difference in form and color. Among the more mature kinds the following named varieties are promising: Plymouth Rock, Farmers' Pride, Belle of Hingham, Snowball, Low's Triumph, Bay State, and Wenham Beauty. Also quite a number designated by numbers are highly promising.

The season was rather earlier this year than common and very fine, wrinkled peas were shown quite early in June. The cool summer was unfavorable for melon culture and the quality of this vegetable was not as good as usual: only some of the salmon-fleshed varieties were up to the mark. We would except some forced under glass and shown July 25, which were fine. The weather conditions must be right to have good melons and, in fact, this is true with all classes of vegetables. The exhibitions scheduled for September 10–13 and October 3 were held together on September 24–27 and were a credit to any society.

The celery, cauliflower, endive, potatoes and tomatoes were all worthy of special mention; and we are reminded in this connection that the gardeners in the vicinity of Boston seem to be losing their once firm hold on the celery prizes, as most of them are going to Bristol County. However we must keep trying.

We had several very interesting and instructive exhibits of Chinese vegetables which were prepared and staged in an attractive manner.

There have been expended during the year for prizes and gratuities $877.00, leaving an unexpended balance of $23.00, out of which a Silver Medal and a Bronze Medal are to be paid.

PRIZES AND GRATUITIES AWARDED FOR VEGETABLES.

1903.

January 3.

Celery.—Four roots of any variety:

1st, W. Heustis & Son, Pascal, $3; 2d, W. Heustis & Son, Boston Market, $2; 3d, A. E. Hartshorn, Boston Market, $1.

Lettuce.—Four heads of Tennisball:

1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.

Parsley.—Two quarts:

1st, A. E. Hartshorn, $3; 2d, A. Nixon, $2.

Gratuities:—

H. R. Kinney, Mushrooms, $2.
A. E. Hartshorn, Collection, $3.
W. Heustis & Son, " $1.

FEBRUARY 7.

RADISHES.—Four bunches of any variety:
1st, A. E. Hartshorn, $3; 2d, H. R. Kinney, $2; 3d, W. W. Rawson, $1.
CELERY.—Four roots:
1st, W. Heustis & Son, $3; 2d, H. R. Kinney, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Fours heads of Tennisball:
1st, W. W. Rawson, $3; 2d, H. R. Kinney, $2; 3d, G. D. Moore, $1.
MUSHROOMS.—Twenty-four specimens:
1st, H. R. Kinney, $3; 2d, I. E. Coburn, $2; 3d, W. C. Winter, $1.

Gratuities:—

A. E. Hartshorn, Collection, $2.
W. Heustis & Son, " $2.

SPRING EXHIBITION.

MARCH 18, 19, 20, 21, 22.

William J. Walker Fund.

RADISHES.—Four bunches of Turnip Rooted:
1st, W. W. Rawson, $2; 2d, A. E. Hartshorn, $1.
CUCUMBERS.—Pair of White Spine:
1st, W. W. Rawson, $3.
DANDELIONS.—Peck:
1st, A. E. Hartshorn, $3.
LETTUCE.—Four heads:
1st, W. W. Rawson, $3; 2d, G. D. Moore, $2; 3d, A. E. Hartshorn, $1.
TOMATOES.—Twelve specimens:
1st, W. J. Clemson, Best of All, $3: 2d, W. J. Clemson, Freedom, $2.

Gratuities:—

A. Low, Seedling Potatoes, $7.
M. W. Chadbourne, Artichokes, $1.
W. Heustis & Son, Collection, $2.
A. E. Hartshorn, " $1

April 4.

Gratuity:—

A. Low, Spinach, $1.

May 9.

William J. Walker Fund.

Asparagus. — Four bunches, twelve stalks each:
1st, E. Parker, $3; 2d, W. H. Hunt, $2; 3d, A. E. Hartshorn, $1.

Cucumbers.—Pair of White Spine:
1st, E. M. Bruce, $3; 2d, G. D. Moore, $2.

Pair of any other variety:
1st, E. M. Bruce, English Frame, $3; 2d, E. M. Bruce, Proctor's Model, $2.

Spinach.—Peck:
1st, A. Low, Round Leaf, $3; 2d, A. Low, Victoria, $2; 3d, G. D. Moore, $1.

Dandelions.—Peck:
1st, A. E. Hartshorn, $3; 2d, J. C. Stone, $2; 3d, W. Heustis & Son, $1.

Rhubarb.—Twelve stalks, open culture:
1st, E. Parker, $3; 2d, W. Heustis & Son, $2; 3d, W. J. Clemson, $1.

Gratuities:—

W. Heustis & Son, Collection, $4.
G. D. Moore, " $2.
A. Low, " $1.
A. E. Hartshorn, " $1.

RHODODENDRON AND PEONY EXHIBITION (*combined*).

June 6, 7. (*Changed from June 5, 6, and 7, and June 13.*)

Theodore Lyman Fund

Beets.—Twelve specimens of any variety:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.

Radishes.—Four bunches:
1st, W. Heustis & Son, $2; 2d, E. L. Lewis, $1.

Asparagus.—Four bunches, twelve stalks each:
1st, W. H. Hunt, $3; 2d, E. Parker, $2; 3d, A. E. Hartshorn, $1

Cucumbers.—Pair:

1st, Geo. D. Moore, $3; 2d, J. C. Stone, $2; 3d, W. W. Rawson, $1.

Lettuce.—Four heads:

1st, W. W. Rawson, $3; 2d, G. D. Moore, $2; 3d, E. L. Lewis, $1.

Rhubarb.—Twelve stalks, open culture.

1st, E. Parker, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.

Mushrooms.—Twenty-four specimens:

1st, W. C. Winter, $3.

Gratuities:—

G. D. Moore, Collection, $2.
A. E. Hartshorn, " $1.
W. Heustis & Son, " $1.

ROSE AND STRAWBERRY EXHIBITION.

June 16, 17. (*Changed from June 23, 24.*)

Beets.— Twelve Summer Turnip Rooted:

1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.

Onions.—Twelve specimens:

1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, W. J. Clemson, $1.

Cucumbers.—Pair of any variety:

1st, J. C. Stone, $3; 2d, G. D. Moore, $2; 3d, Mrs. R. M. Clark, $1.

Lettuce.—Four heads of any variety:

1st, E. L. Lewis, Immensity, $3; 2d, E. L. Lewis, Deacon, $2; 3d, A. E. Hartshorn, Deacon, $1.

Peas.—Half-peck of any variety:

1st, W. J. Clemson, Gradus, $3; 2d, P. B. Bradley, Gradus, $2; 3d, A. E. Hartshorn, Thomas Laxton, $1.

Gratuities:—

G. D. Moore, Collection, $2.
W. Heustis & Son, " $1.

June 30.

Gratuity:—

W. Heustis & Son, Cabbage, $1.

JULY 11.

ONIONS.—Twelve specimens:
1st, E. L. Lewis, $2; 2d, G. D. Moore, $1.
SQUASHES.—Summer, four specimens:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2: 3d, W. Heustis & Son, $1.
CABBAGES.— Three of any variety, trimmed:
1st, G. D. Moore, Early Summer, $3; 2d, W. Heustis & Son, Early Summer, $2; 3d, W. Heustis & Son, Early Spring, $1.
BEANS.—Half-peck of any variety:
1st, A. E. Hartshorn, $3; 2d, G. D. Moore, $2; 3d, J. C. Stone, $1.
PEAS.—Half peck of any variety:
1st, J. Thorpe, $3; 2d, E. L. Lewis, $2; 3d, F. Tetlow, $1.

Gratuities:—

A. E. Hartshorn, Tomatoes, $1.
G. D. Moore, Collection, $2.
W. Heustis & Son, " $1.
A. Low, " $1.
W. Whitman, " $1.

JULY 18.

Levi Whitcomb Fund.

POTATOES.—Twelve specimens:
1st, W. J. Clemson, Early Rose, $3; 2d, E. L. Lewis, Early Northern, $2; 3d, A. Low, Early Essex, $1.
CABBAGES.—Three Drumhead, trimmed:
1st, W. Heustis & Son, Early Summer, $3; 2d, W. Heustis & Son, All Seasons, $2: 3d, A. E. Hartshorn, $1.
LETTUCE.—Four heads, any variety:
1st, E. L. Lewis, Immensity, $3; 2d, E. L. Lewis, Defiance, $2; 3d, E. L. Lewis, Deacon, $1.
BEANS.—Half-peck of any variety:
1st, W. Whitman, $3; 2d, J. C. Stone, $2; 3d, A. E. Hartshorn, $1.
SQUASHES.—Summer, four specimens:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.

Gratuities:—

A. E. Hartshorn, Collection, $1.
A. Low, " $1.
J. C. Stone, " $1.
W. Heustis & Son, " $1.

JULY 25.

LETTUCE.—Four heads of any variety:
1st, E. L. Lewis, Immensity, $2; 2d, E. L. Lewis, Deacon, $1.
BEANS.—Half-peck of any variety:
1st, J. C. Stone, $3; 2d, W. Whitman, $2; 3d, J. Thorpe, $1.
PEAS.—Half-peck of any variety:
1st, A. Low, 999, $3; 2d, A. E. Hartshorn, Prodigious, $2; 3d, A. E. Hartshorn, Telephone, $1.
SWEET CORN.—Twelve ears:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, J. Thorpe, $1.

Gratuities:—

E. S. Converse, Melons, $2.
Col. C. H. Taylor, Potatoes, $1.
W. Heustis & Son, Tomatoes, $1.

AUGUST 1.

POTATOES.—Twelve specimens:
1st, W. J. Clemson, Early Rose, $3; 2d, E. L. Lewis, Early Rose, $2; 3d, A. Low, Early Fortune, $1.
SQUASHES.—Three specimens:
1st, A. E. Hartshorn, $3; 2d, W. Heustis & Son, $2.
SWEET CORN.—Twelve ears of any variety:
1st, A. E. Hartshorn, Crosby, $3; 2d, J. C. Stone, Crosby, $2; 3d, W. J. Clemson, Crosby, $1.
TOMATOES.—Twelve specimens:
1st, J. R. Comley, $3.

Gratuities:—

A. Low, Potatoes, $1.
S. K. Bayley, Chard, $1.
A. E. Hartshorn, Collection, $2.

AUGUST 8.

BEETS.—Twelve specimens:
1st, J. C. Stone, $3; 2d, E. L. Lewis, $2; 3d, J. Thorpe, $1
SQUASHES.—Three specimens of Marrow:
1st, A. E. Hartshorn, $3.
CABBAGES.—Three specimens:
1st, A. E. Hartshorn, Drumhead, $3; 2d, A. E. Hartshorn, Red, $2.
BEANS.—Two quarts, shelled:
1st, J. Thorpe, $3; 2d, W. J. Clemson, $2; 3d, A. E. Hartshorn, $1.

Sweet Corn.—Twelve ears:

1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, D. L. Fiske, $1.

Tomatoes.—Twelve specimens:

1st, J. C. Stone, Atlantic, $3; 2d, W. J. Clemson, Acme, $2; 3d, W. Heustis & Son, Earliana, $1.

Gratuities:—

W. Whitman, Beans, $1.
Aaron Low, Seedling Potatoes, $1.
E. L. Lewis, Collection, $1.

August 15.

Carrots.— Twelve specimens:

1st, E. L. Lewis, Chantenay, $3; 2d, E. L. Lewis, Danvers, $2; 3d, E. L. Lewis, Long Orange, $1.

Parsnips.—Twelve specimens:

1st, G. D. Moore, $3; 2d, E. L. Lewis, $2; 3d, E. Parker, $1.

Endive.—Four specimens:

1st, W. J. Clemson, $3; 2d, E. Parker, $2; 3d, A. E. Hartshorn, $1.

Sweet Corn.—Twelve ears:

1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, J. Thorpe, $1.

Tomatoes.—Twelve specimens:

1st, J. C. Stone, Atlantic, $3; 2d, J. Thorpe, Atlantic, $2; 3d, J. Thorpe, Knowles' Early, $1.

Egg Plant.—Four specimens of Round Purple:

1st, J. C. Stone, $3.

Gratuities:—

V. Buitta, Collection, $1.
Mrs. E. M. Gill, " $1.
A. E. Hartshorn, " $1.

August 22

Potatoes.—Twelve specimens of any variety:

1st, W. J. Clemson, Early Rose, $3; 2d, E. L. Lewis, Clark's No. 1, $2; 3d, A. Low, Plymouth Rock, $1.

Onions.—Twelve specimens:

1st, E. L. Lewis, $3; 2d, W. J. Clemson, $2; 3d, J. B. Shurtleff, Jr., $1

Melons.—Four specimens:

1st, A. E. Hartshorn, $3; 2d, G. D. Moore, $2.

Celery.—Four roots of any variety:
1st, W. J. Clemson, $3; 2d, F. Tetlow, $2; 3d, W. Heustis & Son, $1.
Lettuce.—Four heads:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, W. J. Clemson, $1.
Beans.—Two quarts, shelled:
1st, A. E. Hartshorn, Horticultural, $3; 2d, J. Thorpe, Goddard, $2; 3d, J. Thorpe, Horticultural, $1.
Sweet Corn.—Twelve ears of any variety:
1st, A. E. Hartshorn, $3; 2d, J. C. Stone, $2; 3d, J. Thorpe, $1.
Tomatoes.—Twelve specimens:
1st, W. Lathrop, $3; 2d, J. C. Stone, $2; 3d, A. Nixon, $1.
Peppers.—Twelve specimens of any variety:
1st, E. L. Lewis, Ruby King, $3; 2d, E. L. Lewis, Chinese Giant, $2; 3d, E. L. Lewis, Squash, $1.

Gratuities:—

V. Buitta, Collection, $1.
A. E. Hartshorn, " $1.
A. Low, " $1.
W. Heustis & Son, " $1.
G. D. Moore, " $1.

August 29.

Beets.—Twelve specimens:
1st, J. Thorpe, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, E. Parker, $1.
Melons.—Four specimens:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.
Cabbages.—Three of any variety, trimmed:
1st, A. E. Hartshorn, Drumhead, $3; 2d, A. E. Hartshorn, Savoy, $2.
Cauliflowers.—Four specimens:
1st. W. A. Teele, $3; 2d, E. R. Teele, $2.
Celery.—Four roots:
1st, E. L. Lewis, $3; 2d, W. J. Clemson, $2; 3d, F. Tetlow, $1.
Native Mushrooms.—Named collection:
1st, H. B. Grinnell, $3; 2d, Boston Mycological Club, $2.
Tomatoes.—Twelve specimens:
1st, J. C. Stone, $3; 2d, E. Parker, $2; 3d, J. Thorpe, $1.

Gratuities:—

W. Heustis & Son, Collection, $3.
V. Buitta, " $1.
E. L. Lewis, " $1.
A. Low, " $1.
A. E. Hartshorn, " $1.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS AND OCTOBER EXHIBITION OF FRUITS AND VEGETABLES (combined).

SEPTEMBER 24, 25, 26, 27. (*Changed from September 10-13, and October 3.*)

BEETS.—Twelve specimens:
1st, W. J. Clemson, $3; 2d, A. E. Hartshorn, $2; 3d, W. Heustis & Son, $1.

PARSNIPS.—Twelve specimens:
1st, W. W. Rawson, $3; 2d, G. D. Moore, $2; 3d, E. L. Lewis, $1.

POTATOES.—Twelve specimens of any variety:
1st, E. L. Lewis, Walter Raleigh, $3: 2d, H. R. Kinney, American Wonder, $2; 3d, E. L. Lewis, Clark's No. 1, $1.

SALSIFY.—Twelve specimens:
1st, G. D. Moore, $3.

MELONS.—Four specimens:
1st, A. E. Hartshorn, Emerald Gem, $3; 2d, A. E. Hartshorn, Arlington Nutmeg, $2; 3d, A. E. Hartshorn, Montreal, $1.

SQUASHES.—Three of any variety:
1st, A. E. Hartshorn, Golden Hubbard, $3; 2d, E. L. Lewis, Marrow, $2; 3d, W. Heustis & Son, Marrow, $1.

CABBAGES.—Three specimens of any variety:
1st, A. E. Hartshorn, Drumhead, $3; 2d, A. E. Hartshorn, Red, $2; 3d, E. L. Lewis, Drumhead, $1.

CAULIFLOWERS.—Four specimens:
1st, W. H. Teele, $3; 2d, DeSouza Bros., $2; 3d, E. R. Teele, $1.

LETTUCE.—Four heads of any variety:
1st, G. F. Fabyan, $3; 2d, W. W. Rawson, $2; 3d, A. E. Hartshorn, $1.

CELERY.—Four roots of any variety:
1st, A. Nixon, $3; 2d, E. L. Lewis, $2; 3d, E. Parker, $1.

BEANS.—Lima, two quarts:
1st, Mrs. E. M. Gill, $3; 2d, A. E. Hartshorn, $2; 3d, W. J. Clemson, $1.

SWEET CORN.—Twelve ears:
1st, A. E. Hartshorn, $3; 2d, G. F. Wheeler, $2; 3d, E. Parker, $1.

EGG PLANTS.—Four Round Purple:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.

TOMATOES.—Twelve specimens:
1st, J. Thorpe, $3; 2d, E. L. Lewis, $2; 3d, E. Parker, $1

MARTYNIAS.—Twelve specimens:
1st, E. L. Lewis, $2; 2d, E. S. Converse, $1.

PEPPERS.—Twelve specimens of Squash:
1st, A. E. Hartshorn, $2; 2d, E. L. Lewis, $1.
Twelve of any other variety:
1st, E. L. Lewis, Ruby King, $2; 2d, A. E. Hartshorn, $1.
CARROTS.—Twelve Long Orange:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, H. W. Anderson, $1.
Twelve Intermediate:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, J. Thorpe, $1.
POTATOES.—Twelve Carman, No. 1:
1st, H. W. Anderson, $3; 2d, E. L. Lewis, $2; 3d, C. Scully, $1.
Twelve Early Fortune:
1st, C. Scully, $3; 2d, H. W. Anderson, $2.
Twelve Hebron:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, H. W. Anderson, $1.
Twelve Rose:
1st, H. R. Kinney, $3; 2d, C. Scully, $2; 3d, W. J. Clemson, $1.
Twelve of any other variety:
1st, C. Scully, $3; 2d, E. L. Lewis, $2; 3d, H. R. Kinney, $1.
TURNIPS.—Twelve Flat:
1st, J. Reed, $3; 2d, G. F. Wheeler, $2; 3d, C. S. Pratt, $1.
Twelve Swedish:
1st, Mrs. J. L. Gardner, $3; 2d, J. Thorpe, $2; 3d, W. H. Teele, $1.
ONIONS.—Twelve Danvers:
1st, J. B. Shurtleff, Jr., $3; 2d, W. H. Derby, $2; 3d, W. H. Teele, $1.
Twelve Red:
1st, A. E. Hartshorn, $3; 2d, W. H. Derby, $2; 3d, W. H. Teele, $1.
Twelve White:
1st, A. E. Hartshorn, $2.
SQUASHES.—Three Bay State:
1st, G. F. Wheeler, $3; 2d, E. L. Lewis, $2; 3d, W. Wheeler, $1.
Three Hubbard:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, G. F. Wheeler, $1.
Three Hybrid Turban:
1st, W. H. Derby, $3; 2d, G. F. Wheeler, $2; 3d, E. L. Lewis, $1.
Three Marrow:
1st, W. Heustis & Son, $3; 2d, J. C. Stone, $2; 3d, V. Frost, $1.
CUCUMBERS.—Pair of White Spine:
1st, J. Thorpe, $3.
Pair of any other variety:
1st, E. M. Bruce, $3; 2d, H. W. Anderson, $2.
MELONS.—Four specimens:
1st, A. E. Hartshorn, Montreal, $3; 2d, A. E. Hartshorn, Arlington Green Flesh, $2; 3d, A. E. Hartshorn, Salmon, $1.
CABBAGES.—Three Drumhead, trimmed:
1st, A. E. Hartshorn, $3.

Three Savoy:

1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, W. J. Clemson, $1.

CAULIFLOWERS.—Four specimens:

1st, W. H. Teele, $4; 2d, DeSouza Bros, $3; 3d, C. M. Handley, $2.

CELERY.—Four roots of Paris Golden:

1st, W. J. Clemson, $4; 2d, A. Nixon, $3; 3d, E. L. Lewis, $2.

Four roots of any other variety:

1st, E. L. Lewis, $4; 2d, W. J. Clemson, $3; 3d, A. Nixon, $2.

ENDIVE.—Four specimens:

1st, V. Buitta, $3; 2d, V. Buitta, $2; 3d, W. J. Clemson, $1.

LETTUCE.—Four heads:

1st, A. E. Hartshorn, $3; 2d, A. Nixon, $2; 3d, G. D. Moore, $1.

PARSLEY.—Two quarts:

1st, E. Parker, $2; 2d, A. E. Hartshorn, $1.

SWEET CORN.—Twelve ears:

1st, A. E. Hartshorn, $3; 2d, G. F. Wheeler, $2; 3d, E. Parker, $1.

EGG PLANTS.—Four Round Purple:

1st, J. C. Stone, $3; 2d, E. S. Converse, $2; 3d, H. R. Kinney, $1.

TOMATOES.—Twelve Aristocrat:

1st, J. Thorpe, $3; 2d, A. Nixon, $2; 3d, E. Parker, $1.

Twelve May's Favorite:

1st, A. Low, $3; 2d, W. Heustis & Son, $2.

Twelve Stone;

1st, A. Nixon, $3; 2d, W. J. Clemson, $2; 3d, J. Thorpe, $1.

Twelve of any other variety:

1st, E. L. Lewis, $3; 2d, A. Low, $2; 3d, J. Thorpe, $1.

PEPPERS.—Twelve Squash:

1st, A. E. Hartshorn, $3; 2d, A. Low, $2; 3d, E. L. Lewis, $1.

Twelve of any other variety:

1st, E. L. Lewis, Bull Nose, $3; 2d, E. L. Lewis, Ruby King, $2; 3d, A. E Hartshorn, Bull Nose, $1.

Gratuities:—

E. L. Lewis,	Collection,	$5.
W. Heustis & Son,	"	$5.
A. Low,	"	$5.
V. Buitta,	"	$3.
G. D. Moore,	"	$1.
H. W. Anderson,	"	$1.

CHRYSANTHEMUM EXHIBITION.

NOVEMBER 5, 6, 7, 8.

CELERY.—Eight roots, commercial grown:

1st, W. J. Clemson, Silver Medal; 2d, E. Parker, Bronze Medal.

PARSNIPS.—Twelve Hollow Crown:
1st, A. E. Hartshorn, $3; 2d, E. Parker, $2; 3d, E. L. Lewis, $1.
SALSIFY.—Twelve specimens:
1st, E. Parker, $3.
CUCUMBERS.—Pair:
1st, F. Pierce, $3; 2d, E. L. Dorr, $2.
CABBAGES.—Three Red, trimmed:
1st, E. L. Lewis, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.
Three Savoy, trimmed:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, J. Parker, $1.
BRUSSELS SPROUTS.—Half-peck:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, E. Parker, $1.
CAULIFLOWERS.—Four heads:
1st, C. M. Handley, $3.
CELERY.—Four roots:
1st, A. Nixon, $3; 2d, W. J. Clemson, $2; 3d, E. Parker, $1.
ENDIVE.—Four specimens:
1st, A. E. Hartshorn, $3; 2d, A. E. Hartshorn, $2; 3d, E. Parker, $1.
LETTUCE.—Four heads:
1st, E. Parker, $3; 2d, E. L. Dorr, $2; 3d, G. D. Moore, $1.
YELLOW CORN.—Twenty-five ears, traced:
1st, E. Parker, $3; 2d, E. M. Bruce, $2; 3d, C. Scully, $1.
TOMATOES.—Twelve specimens, grown under glass:
1st, Hittinger Bros., $3.

Gratuities:—

A. Nixon,	Collection,	$5.
E. L. Lewis,	"	$5.
A. E. Hartshorn,	"	$4.
W. Heustis & Son,	"	$4.
H. F. Gowell,	"	$1.
Goodell Farm,	"	$1.
J. C. Stone,	"	$1.

WARREN HOWARD HEUSTIS,
VARNUM FROST,
WALTER RUSSELL,
AARON LOW,
GEORGE D. MOORE,
JOSHUA C. STONE,
MICHAEL SULLIVAN.
} *Committee on Vegetables.*

Mrs. A. W. Blake's Estate, Brookline.

On June 11 your committee was called upon to visit the estate of Mrs. A. W. Blake at Kernwood, Brookline. This consists of about fifty acres situated in the heart of this splendid town and is noted for having been in the family for a great number of years. The estate is cared for by Henry Wild and is in a most excellent condition; it is covered with fine specimens of trees, shrubs and flowers.

One of the rarest, hardy plants we noticed was a noble specimen of the climbing hydrangea which had attained great size and beauty. The central situation of this estate makes it a most desirable place of residence.

Goodell Farm, Wenham.

On June 13 the committee visited Goodell Farm at Wenham to inspect a strawberry garden. This consisted of about nine thousand square feet in matted beds and was very well fruited considering the adverse weather during the springtime. The attention of the committee was called to a chance seedling found by the manager of the farm growing on top of a gravelly knoll. It presented such a favorable appearance when discovered that he transplanted it to the farm and hopes to show the fruit the coming year at the Rose and Strawberry Exhibition. It is a very large berry something after the style of the Marshall and is named the Windmill after the estate on which it was found. The varieties cultivated on the Goodell Farm are the Gladstone, Minute Man, Sample, New York, Nick Ohmer, besides the Marshall and others. The committee's experience in growing large berries does not favor growing them in matted beds as the heavy foliage retains so much moisture that it is liable to rot the best berries on the plants.

Hadwen Park, Worcester.

The next visit was made on June 25 by invitation of the President of our Society, O. B. Hadwen, Esq., to inspect a large area of land which he has lately presented to the City of Worcester for park purposes. This tract of land comprises some fifty acres

Mrs. A. W. Blake's Estate, Brookline.

most of which is covered by a magnificent growth of forest trees, principally oak, chestnut, and pine. The land is remarkably well adapted for park purposes as the surface is so varied by ridges and valleys as to make a most attractive landscape. As one rides on the tops of these ridges the scene is constantly shifting and gives visitors delightful vistas up and down the valleys. The park is being constantly improved by the judicious planting of choice shrubbery and the clearing away of underbrush and fallen leaves, thereby giving the surface of the ground under the large trees a very clean, cool, and comfortable appearance.

This land borders for more than half a mile, upon Curtis' Pond thus adding a very pleasant feature to the landscape.

Worcester is fortunate in having a citizen of so much public spirit and generosity; and this gift of Mr. Hadwen's will always be appreciated and will be to all future generations, as well as the present, a "thing of beauty and a joy forever."

George D. Moore & Son's Vegetable Garden, Arlington.

The next visit this season was to the market garden of George D. Moore & Son at Arlington which occurred June 26. A house of cucumbers was the first to attract our attention. This house was two hundred twenty-five feet long by forty feet wide and contained four hundred fifty vines heavily fruited and in fine condition.

The variety was the White Spine and the vines were planted in the ground. We noticed that some of the finest specimens were reserved to ripen for seed and we commend this method of improving the quality of the product. The Moores are very successful in growing cucumbers and, in fact, everything else they undertake and they have no difficulty in disposing of their crops in the neighboring city, at remunerative prices. The vegetable farm of some fifteen acres was heavily cropped with the choicest beets, celery, beans, onions, cabbages, rhubarb, tomatoes, spinach, corn, salsify, parsnips, melons, and peas, presenting a fine appearance.

Miss E. Jackson Clark's Estate, Pomfret, Conn.

On July 9 the committee visited La Plaisance, the estate of Miss E. Jackson Clark at Pomfret, Connecticut, to inspect two graperies and an orchard house all under one roof, the extent of which is one hundred feet by twenty-six feet, divided into three equal sections. The grape houses contained nineteen and sixteen vines respectively which were heavily fruited with large and well-finished bunches of grapes. Some of the product of these grape houses was exhibited the present season by John Ash, the manager of the estate, at the exhibition of the American Pomological Society at Horticultural Hall, Boston, where it attracted a great deal of attention and received the Wilder Medal for excellence. The fruit house, or more properly called the orchard house, was a surprise to your committee as it contained a greater variety of fruit than we ever saw before under glass. This consisted in part of peaches in variety, pears, plums, apples, nectarines, figs, etc. and the trees were fairly well fruited and presented a healthy appearance. It will be of interest to add in this connection that the grapes, peaches, and nectarines were grown in twelve-inch pots while the apples and pears were in ten-inch pots. The melon house, a photograph of which is herewith reproduced, was also inspected. On account of the uncertainty attending the cultivation of the melon in the open, in this section of the country, the growing of them under glass is increasing.

By request of the committee Mr. Ash contributes to this report the accompanying notes upon his methods of cultivation.

La Plaisance, Estate of Miss E. J. Clark, Pomfret Centre, Conn., John Ash, Superintendent.

Culture of Fruit Trees in Pots.

It gives me great pleasure to give a few hints from my experience in the cultivation of fruit trees in pots. These can be procured either direct from England or through any reliable importer of fruit trees. Fruiting trees, imported late in the fall, will bear a full crop the following summer and in this way apples, pears, peaches, nectarines, cherries, grapes, apricots, etc. can easily and successfully be grown either in a house especially devoted to them or in peach houses, and later in the season, when more ventilation is given, in graperies. The temperature of a peach

La Plaisance Residence of Miss E. Jackson Clark, Pomfret Connecticut

Melon House of Miss E. Jackson Clark.

house suits hardy fruit trees admirably and you thus utilize to advantage space which otherwise would be producing nothing. When the trees are growing they can be fed liberally with liquid barnyard manure, until the fruits show signs of coloring, when nothing but clear water must be given and the trees allowed to become drier at the roots than they have been during the period of swelling their fruits, in order to insure flavor and sweetness. After the fruits have been gathered, the trees must be placed outside, standing the pots on boards, where they can get abundance of sunshine and natural outdoor conditions, in order to thoroughly ripen the wood, as on this treatment, of course, depends the success or failure of the next year's crop. The trees can be left outside until there is danger of frost breaking the pots, then move them into a cool greenhouse or a light, cool cellar, there to remain until needed for forcing. The trees should then be turned out of the pots, the drainage carefully examined and renewed where necessary; remove with a pointed stick a little of the outer soil from the ball, then put back into the pots and fill in with new soil in which has been mixed a quantity of bone, and your trees are ready for another season's product.

The following is a list of fruits grown at La Plaisance under glass:

Apples.—Washington, Emperor Alexander, Peasgood's Nonsuch, Mother, Melon, Bismarck, Lady Henniker, Cox's Pomona, Mannington Pearmain, King of Tompkins County, Cox's Orange Pippin.

Pears.—Buerre Hardy, Durandeau, Fondante d'Automne, Conference, Marie Louise, Pitmaston Duchesse, Doyenne du Comice.

Cherries.—Bigarreau Noir de Guben, Emperor Francis, White Bigarreau, Reine Hortense, Early Rivers.

Plums.—Early Transparent Gage, Oullin's Golden Gage, Grand Duke, Blue Rock, Coe's Golden Drop, Jefferson, Nonsuch, Belgian Purple.

Peaches.—Gladstone, Dagmar, Thomas Rivers, Duchess of Cornwall, Hale's Early, Crawford's Early, Royal George, Princess of Wales, Alexander, Barrington, Dymond, Crimson Galande, Spencer.

Nectarines.—Humbolt, Cardinal, Early Rivers, Lord Napier, Victoria, Downton, River's Orange, Pine Apple, Pitmaston Orange.

Figs.—Bourjassotte Noire, Brown Ischia, Brown Turkey, Figue d'Or, Violette Sepor, White Marseilles.

Grapes.—Diamond Jubilee, Black Hamburg, Canon Hall Muscat, Madresfield Court, Mrs. Pearson, Foster's Seedling, Buckland Sweetwater, Mrs. Pince, Alnwick Seedling, Muscat of Alexandria, Gros Maroc, Lady Down's Seedling, Gros Guillaume, Black Alicante.

Melons under Glass.

The varieties of melons grown under glass here last year, of which the accompanying photograph gives a partial view, were Frogmore Scarlet, Lord Derby, and Invincible Scarlet, principally. I also grew a few Rocky Ford and Emerald Gem, both of which did very well. The variety Lord Derby is thought very highly of here.

The melons succeeded a crop of tomatoes and were planted about May 1st in hills composed of good stiff loam, three feet apart, and a night temperature of 65° maintained, allowing the sun heat to run up to 90° with judicious ventilation.

As the plants grow and extend their roots, the spaces between the hills are filled in with good heavy loam in which is mixed a liberal portion of well-rotted cow manure. When watering the plants great care must be taken not to saturate the soil immediately around the stem of the melon as they are very apt to decay if any moisture lodges there. If any decay is noticed a little unslaked lime, powered fine, and put on carefully wherever any rotting appears will invariably stop it. The house above mentioned, which is thirty-three feet long by sixteen feet wide, produced over two hundred melons last year, the first fruits ripening about the first of July.

JOHN ASH.

MRS. J. C. WHITIN'S ESTATE, WHITINSVILLE.

The next visit occurred on August 17 when we were called to inspect a house of foreign grapes on the estate of Mrs. J. C. Whitin at Whitinsville, Massachusetts.

This house was furnished with nineteen vines of eight varieties of the very best kinds grown. The vines were filled to repletion with fine, large bunches of uniform size and presented a splendid appearance. The house was a credit to William McAllister, the manager of the estate, and was very much admired by the committee.

A. E. MONBLO'S GARDEN, MALDEN.

Our next visit was made September 3 to the village estate of A. E. Monblo at Malden to inspect a small area of the "India" raspberry growing in the garden. This fruit is quite new to your committee, although it was brought to this country a good many years ago. It is very attractive in appearance having glossy green foliage and a brilliant scarlet fruit of large size. The fruit is of a very mild flavor and can be eaten in all the various ways that other small fruits are, and is quite an acquisition to the amateur gardener. If some one will cross it with the Cuthbert raspberry to give it more flavor it will, doubtless, become an exceedingly valuable addition to the list of small fruits.

Mrs. J. C. Whitin's Estate, Whitinsville.

H. H. Rogers' Estate, Fairhaven.

H. H. Rogers' Estate, Fairhaven.

On September 4 we visited the estate of Henry H. Rogers, Esq. at Fairhaven. This estate is entered for the H. H. Hunnewell Triennial Premium and this year completes the three years' entry. We were much pleased with the skill with which the gardener of the estate, James Garthley, has done his work and he deserves great credit for his taste in beautifying the place and in the massing of flowers and foliage plants and in making them grow so luxuriantly under such adverse conditions. The whole area of the estate was once a huge granite ledge which has been leveled off and covered with soil and a goodly number of acres reclaimed and made into a fine, soft lawn surrounded with a grand border of beautiful trees, shrubs, and flowers. The estate comprises about twenty-five acres and has been most judiciously handled by Mr. Garthley to make it a luxurious place in which to reside. We award this estate the H. H. Hunnewell Triennial Premium.

J. B. Lawrence's Dahlia Garden, Abington.

We visited on September 15 the dahlia garden of J. B. Lawrence at Abington. This garden contained about an acre of land fully covered with plants in full bloom and presented a very fine sight. The garden is replenished every year with the new varieties as they are brought out, thereby keeping up the enthusiasm of the growers and stimulating the interest of cultivators in this now popular flower.

W. P. Lothrop's Dahlia Farm, East Bridgewater.

The next visit occurred on September 29 when we visited W. P. Lothrop at East Bridgewater to view his dahlia farm. This consisted of four acres fully covered with fine plants in full bloom. Mr. Lothrop is an enthusiastic cultivator of this class of plants, procuring all the worthy, new kinds as they are introduced, thereby keeping his collection up to the times so that he can supply his customers every year with all the choicest varieties in cultivation.

The dahlia is easy to cultivate and by its free flowering, provided the soil is not too rich, well repays the small amount of labor required in attending to it.

Hon. E. S. Converse's Estate, Malden.

On November 3 we visited the fine, old homestead of Hon. E. S. Converse at Malden to inspect a chrysanthemum house arranged for effect with other decorative plants, and also a house of chrysanthemums planted on benches. The house arranged for effect was one hundred twenty feet long by twenty feet wide with a path down the center, on each side of which the plants were placed in a most artistic manner. Sixty-five very large plants, a large number of standards and small plants, and many decorative plants were used to fill in to make up a house of floral beauty not often seen on any estate. The skill with which the plants are made to obey the will of the artist gardener (David F. Roy in this case) rather than their own natural conditions is one of the wonders of horticulture and is achieved only through long experience and the taking of infinite pains by the enthusiastic gardener. The display in the house planted on benches was far ahead of anything your committee ever inspected. There were five hundred plants trained to one stem and flower embracing one hundred and seventy varieties of the very finest plants in cultivation. The variety of form and coloring was wonderful and beyond description and the effect was very beautiful. The citizens of Malden are fortunate in being allowed by Mr. Converse free access to this scene of beauty. On one day over seventeen hundred persons enjoyed this privilege much to their delight.

Edmund W. Converse's Estate, Newton.

On November 4 your committee visited the noble, old estate of Edmund W. Converse at Newton to inspect a house of chrysanthemums arranged for effect with other decorative plants. This house was not large, only fifty feet long by twenty feet wide, but it was filled with a goodly number of large and small plants arranged by the gardener, Robert Marshall, in a very

artistic manner. This being our first visit to this place, your committee was very much pleased with the cordial reception extended and with the general, grand appearance of the whole estate.

The Prizes and Gratuities awarded this year are as follows:

H. H. Hunnewell Triennial Premium.

For an estate of not less than three acres, which shall be laid out with the most taste, planted most judiciously, and kept in the best order for three consecutive years:

First, Henry H. Rogers	$160 00

Special Prizes from the John A. Lowell Fund.

For the best house of Chrysanthemums, arranged for effect with other plants:

First, Hon. E. S. Converse	25 00
Second, Edmund W. Converse	10 00

For the best house of Chrysanthemums grown on benches:

First, Hon. E. S. Converse	25 00

Special Prizes offered by Edward Hatch.

For the best Fruit House, plants grown in pots or tubs included:

First, Miss E. Jackson Clark	30 00

Society's Prizes.

For the best House of Foreign Grapes:

First, Miss E. Jackson Clark	25 00
Second, Mrs. J. C. Whitin	10 00

For the best Strawberry Garden:

First, the Goodell Farm	25 00

For the best Dahlia Garden:

First, W. P. Lothrop	25 00
Second, J. B. Lawrence	10 00

For the best Vegetable Garden:

First, George D. Moore & Son	25 00

For the best House of Cucumbers:

First, Warren W. Rawson	25 00
Second, George D. Moore & Son	10.00

GRATUITIES.

O. B. Hadwen, for Hadwen Park $25 00
Mrs. A. W. Blake, for Estate 25 00
A. E. Monblo, for "India" Raspberry 10 00
Mrs. J. C. Whitin, for Estate, a Silver Gilt Medal.
David F. Roy, for Superior Cultivation of Chrysanthemums, a Silver Gilt Medal.
John Ash, for Superior Cultivation of a House of Fruits, a Silver Gilt Medal.

Respectfully submitted,

PATRICK NORTON,
ARTHUR H. FEWKES,
KENNETH FINLAYSON,
E. W. WOOD,
WARREN H. HEUSTIS,
J. H. WOODFORD,
HENRY W. WILSON,
J. WOODWARD MANNING.

Committee on Gardens.

Hon. E S. Converse's Estate, Malden.

REPORT

OF THE

Committee on School Gardens and Children's Herbariums.

FOR THE YEAR 1903.

By HENRY LINCOLN CLAPP, Chairman.

Weeding and watering in Spring.

George Putnam School Garden.

A new impetus was given to the work in the George Putnam School garden in the spring of 1903 by the gift of five hundred packages of flower seeds from Hon. Henry F. Naphen, Representative to Congress and a resident of South Boston. Each of the paper bags composing the five hundred contained packages of flower seeds, such as centaurea, eschscholzia, clarkia, nasturtium,

Visit of the Normal School Girls.

sweet pea, phlox, portulaca, calendula, calliopsis, cosmos, dianthus, mignonette, and coreopsis, all of which are pretty sure to produce beautiful flowers whose blossoming period is long.

A gentleman who learned of this gift said: "Well, there, that is a distribution of seeds that has amounted to something. The seeds have fallen into the right hands. I have been skeptical for years in regard to the free distribution of seeds from Washington: but if it is to take this form I have nothing but commendation for it."

Not only were the seeds given to the children who had gardens at school, but to those who had them at home, or to those who manifested interest enough in gardening to make a garden at home for the first time. This apparently insignificant gift of a few seeds furnished a motive far-reaching in its nature.

In the first place the seeds were from a celebrated place, Washington, the Capital of the United States. Each package had a stamp of high authority,—"U. S. Department of Agriculture." If on this account the seeds were imagined to possess

Weeding in the Autumn.

exceptional value, interest in them was increased. Secondly, they were the gift of a celebrated man, a Representative to Congress, who, no doubt, had heard of the children's garden work, and, in consequence, had kindly remembered them.

The pupils of the school for many years have been accustomed to write a composition regularly once a week on a subject that could be properly classed under one of the four following heads: experience, imagination, reproduction, letter. I suggested that

all the gardeners who had received seeds from Mr. Naphen should write him a letter of their experiences with the seeds. They did so. The following extracts from their letters attest the genuineness of their work and their enjoyment in it.

A reminder of Millett.

EXTRACTS FROM
PUPILS' LETTERS TO HON. HENRY F. NAPHEN.

MR. HENRY F. NAPHEN,
So. BOSTON, MASS.

DEAR SIR:

I thank you very much for the seeds you gave to us. When you sent them we were all delighted. Mr. Clapp gave us all one large package apiece which contained five small ones. Then he described them and told us how deep to plant them, after which we went out into the garden and planted them. We had a very nice time that afternoon. After that we were all watching to see who would have the first flower.—WM. WAUTERS.

DEAR SIR:

I received your seeds in the spring and had just enough to make a pretty garden. The school gardens looked very pretty this summer, and we regret very much that you did not come to see them.

In two corners of my garden I had chrysanthemums, and in the other two I had fleur-de-lis. Between the chrysanthemums I planted sweet peas, and between the fleur-de-lis I planted nasturtiums. I had a straight line down the centre in which I planted marigolds.

I took a great deal of pleasure in watching the flowers grow. I also planted lettuce, radishes, turnips, and carrots. Last Thursday I went out to the gardens and picked an armful of turnips and carrots, and another armful of chrysanthemums.—KATHERINE M. FINN.

Unfortunately of the different seeds I received and planted I had success with only two, sweet peas and nasturtiums. I also planted radish and lettuce seeds, lima beans, and a few dahlias, which all grew very well, as we had a very rainy summer. With constant care I went to my garden as often as I could I do believe that it did us as much benefit as could be expected. I sincerely regret that it is only one year that we have for garden study, because I surely know we should be more able to take care of it another year.—EDITH SIKORA.

Two years ago I had a garden which I was much interested in. The first thing I did was to take a fork and dig the earth up, then pick out the weeds and stones; then rake it over and get ready for planting. I did that in one lesson on Monday. During the week I planted seeds of radishes, nasturtiums, and lettuce.

The lettuce plants were the last to come up, but they were fine. In another week they were so near together that I had to separate them the same way as the radishes.

I kept my garden clean from weeds and in a few more weeks I had radishes for dinner. They were fine and rosy and they tasted better than they looked. The lettuce was nice and tender and I had a very successful garden.—FRANK E. WHITE.

The first thing that I did when I got out was to choose a garden. I chose one facing Dixwell Street that got a lot of sun and that had dark, damp soil.

Of course the first thing that I did was to weed my garden, and it was quite a hard thing to do because there were great big weeds, and their roots were so fast in the ground that it made big blisters on my hands to pull them up.

I came up a few times during vacation and watered my garden and took out the weeds. I was very sorry to lose it because I so enjoyed taking care of it.—PAULINE BIESENBACH.

It was last year when some of the pupils received a school garden from our schoolmaster. We went out in the month of October to loosen the

soil. After we got through we started to plant bulbs of different kinds. They were placed in circles, each containing one half-dozen.

The next spring they came up finely. Some pupils had tulips and others different kinds. Later on we received different kinds of seeds from Mr. Clapp. He told us to plant each kind in one straight line, which we all did. Afterwards we planted many kinds of vegetable seeds, and some did not come up right.

In vacation time we went up and weeded our gardens. After we came back to school we had so much to do that we didn't know where to start. Mr. Clapp told us that you were the man that gave us the seeds. Thank you.—William Flotow.

I thank you kindly for your gift of seeds. I enjoyed planting them very much.

I think it is a very good idea that the girls and boys learn agriculture. One of the pleasantest afternoons was Monday, the time we went out gardening. I think I should enjoy having a little farm of my own.—Edith Moran.

One day last year Mr. Clapp, our principal, came into the room and asked who had gardens at home. Then he asked us what we had in our gardens. He picked out a number and told us to get our hats and go into the gardens and choose one for ourselves.

The gardens are quite large. They are about ten feet long and eight feet wide. There were a great many weeds to be pulled up, and to this task we set ourselves as soon as possible. Then we hoed up the ground to see that there were no roots or bulbs in it.

Then the seeds were given out, and I am sure we all thank you very much for sending us the seeds. Then the numbering of the packages came in this order: golden wave, Chinese pink, nasturtium, and sweet pea. I planted lettuce which did not come up at all, and radishes which came up finely. Mr. Clapp bought some Windsor beans and distributed them. When mine came up there were not enough beans for a mouthful, when cooked.—Minnie Nagel.

Dear Sir:

I thank you very much for the seeds I received from you, and am pleased to say that they came up nicely. About half of my garden was planted with flowers, while the other half was planted with Windsor beans, radishes, and lettuce.

Whenever we came up from our gardens we always had some flowers. The girls picked a bunch and gave them to the teacher. The boys put them in their button holes. I am sorry that I have to lose my school garden.—Benno Bernstein.

My garden has a fine location, being sunny and also sometimes shady. I planted my seeds in circles, and with the exception of the sweet peas they came up in circles. But alas for the sweet peas! I waited and

waited for them, and to tell the truth, felt quite discouraged. But when they did come up, what then? Well, if every gardener had been blind I think he would have known my sweet peas were growing, I was so proud of them.

How we worked pulling the weeds! And you possibly couldn't imagine how pleased we were as we presented our first flowers to our teacher. When our principal or any visitors spoke in praise of our gardens how happy we looked! Yes, indeed, those seeds were the source of our pleasure. We shall always be grateful to you for them.—May G. Morse.

When I first got my garden I had to weed it out, it was full of weeds and some of the weeds were so tall and so hard to pull up that I had to hoe them up.

The next difficult work was to hoe up the whole garden. It was full of stones and large rocks. When I got it all hoed up I had to rake it off, and at last I had it looking fine.

I planted some crocus, tulip, and snowdrop bulbs. One day in April I went out to see if any of my bulbs had come up, and to my surprise I saw six crocus blossoms and two of the sweet snowdrop blossoms. None of my tulips came up. I suppose that they got frozen during the winter.

In the summer I used to come and weed my garden out so that the weeds wouldn't kill the flowers or vegetables.

I got some beets, radishes, turnips, and carrots out of my garden, in which I took a deal of pleasure. I have a garden this year too.

I brought six dozen and a half bulbs to school to plant in my garden this year.—Grace Boyd.

My garden had a row of nasturtiums in the southern portion; on the western side Windsor beans; on the north side nasturtiums; and on the eastern part a mixture of little clusters of sweet peas, nasturtiums, and marigolds. In the centre I had a large dahlia.

Through the summer I have made many enjoyable trips to my garden. Though it was situated in the sunny portion, and it was rather hot pulling weeds, after I was through it proved very pleasant to look upon.

We have had a frost and all the pretty little heads have bowed and fallen asleep, and those who want the tulips and crocuses in the spring are planting their bulbs now. I put a covering over my pansies and I expect I shall have blossoms in the spring.—Theresa Day.

Last year I had a very pretty garden which I disliked to give up. We have only one year of gardening, which passes very quickly. I had many varieties of flowers, some of which are in bloom now. Some hot days it was quite tedious pulling up the weeds, but when the flowers sprung up it was a great repayment for the labor.

We had many pictures taken when the gardens were in bloom. Some were taken when we were hoeing, raking, weeding, or examining flowers.

I like gardening very much and I have one at home.—Marguerite Rouleau.

A person of ordinary intelligence will see that the work described in separate bits by these letters is surely of that kind that leads back to the soil. A love for gardening acquired early in life will move the one who has it to seek the country some time or other. That is a matter of great importance to city and country alike. The problems of congested cities have never been properly solved. Educational centers where heat, light, entertainment, and

Ready for planting.

instruction in music, art, letters, and trades are all free gifts, where opportunities for "going somewhere every night" are given, present the strongest inducements not only to those already in the city to stay in, but to those outside to come in by any and every means whatsoever. Educational centers have started a new problem more insoluble than the old ones. The movement toward separation which has made some progress during the past few years has been checked by this new and opposite movement

toward concentration. Hereafter greater concentration must be wrestled with.

The effect of concentration is already shown by statistics to be dangerous to the welfare of Massachusetts and Boston especially, and the educational systems of the state and city should do something to counteract that effect.

Dr. William A. White, Superintendent of the Government Hospital for the Insane at Washington has found out, "as

Planting bulbs.

clearly by the census of 1850 as by that of 1880, and it is confirmed by every census that has been taken," that Massachusetts has the largest amount of pauperism relatively to the population of all the United States, and that Boston is the centre of insanity as well as pauperism in the United States. "Where population is densest, the struggle for existence is keenest—the survival of the unfit is at work; and increased insane asylums and almshouse facilities become a necessity."

"The frontiersman who takes his family and goes west to open up new territory, *to engage in legitimate agricultural pursuits*, and

to grow up with the country is pretty apt to be of hardy stock, and insanity, if it appears at all, comes in later generations."

So the schools should educate pupils not wholly for city life as now, but actually lead them out to the country where there is room, light, air, and sweetness; should interest them in and prepare them for that life; should understand that educationally,

Hardy Chrysanthemums.

socially, and productively, distribution is quite as important as concentration for the uplifting of the race. If cities would spend as much on properly distributing families, and inducing or forcing the lazy and shiftless to work as they do on alms-giving, asylums, and free gifts of educational facilities that bind the participants more and more firmly to cities, in time pauperism, insanity, and vagabondage would decrease, to say the least.

The young can learn no better lesson than to work for what they get. That is the lesson of the garden. The city generally gives a lesson of another sort. Get as much as you can without earning it. The grafter's resort is at city halls; the plumber represents what may be expected from workmen: the lazy and shiftless "work" the churches and the benevolent old ladies; the

Productive energy.

schools supply books, all sorts of school material, shoes and clothes; the educational centers furnish free entertainment and instruction; and the city treasury is generally considered common poaching ground. The garden demands honest, exacting work; the results balance the labor; the laborer must render an equivalent for what he receives; the garden cannot be "worked" by drones and whiners; the "grafting" is on trees, not on pocket-books.

Again, to implant a love for horticulture in the hearts of children is of great importance to the horticultural societies for their maintenance and satisfactory progress. During the year 1903 thirty members of this society died. Recruits must be found to fill the places of the aged horticulturists removed by death. If the filling up of the ranks is left to chance or to the educational centers of the present type, the outlook for interest and advance steps in horticultural affairs is by no means promising.

If state boards of education and horticultural societies realize fully that the continued prosperity of this nation depends primarily on agriculture and secondarily on the mill, the mine, and the workshop, they should be manifesting it by some appropriate action. They admit the educative value of the workshop, but say little and do less concerning land culture, perhaps because united shopmen are so aggressive and farmers so retiring.

Dedham School Garden.

At the Oakdale School, East Dedham, about ten miles from Boston, there has been laid out by Mr. Fred H. Kennard, the landscape gardener, a model school garden which probably surpasses any other garden of the kind in this country. There is a botanical garden for native plants containing twenty-six beds, each four feet wide and eighteen feet long, where fifty-two children can dig, weed, water, and study. At the rear of the large lot is a kitchen garden with forty-eight beds, each four feet wide and twenty-two feet long. Ninety-six children can be given garden work there. Adjoining this garden is a small lot designed for a nursery where pupils are to be taught to prune, graft, and transplant small trees. One hundred eighty varieties of trees, shrubs, and vines have already been planted, and many more are to follow.

Children's Gardens in New York City.

At present DeWitt Clinton Park, in the centre of New York City, is a tract of barren land, except a small plot two hundred feet long and one hundred feet wide, which is used as a children's garden. Each garden is four by twelve feet and there are over two hundred of them. The boys and girls raise the ordinary

quick-growing vegetables—radishes, lettuce, peas, beans, onions, beets, turnips, carrots, endive, kale, as well as buckwheat, wheat, rye, and oats for materials to study in school.

Mrs. Parsons, the director, says it is easier to furnish an occasional farm plot than to maintain reformatories and prisons later on. A little house of one room has been built and two little housekeepers a day are appointed and taught how to keep things clean and orderly. In their zeal to keep things clean the children sometimes wash clean towels and the little pig "Clinty," and dust the roof.

This is a commendable educational center.

The Home Gardening Association.

The Home Gardening Association of Cleveland, Ohio, has done a great work in inducing school children to plant seeds and raise flowers in a barren and unattractive part of the city.

There were sold to the children at one cent a packet 116,489 packets of seeds, and in the fall 11,000 bulbs were sent to the school buildings. "Last year every room was brightened by these flowering bulbs. More yards have been cleaned up, more beautiful gardens are in evidence, and our city is showing the effect of seeds planted in 25,000 homes."

This work was begun in the spring of 1900, meetings have been held once a month during the winter and weekly during the summer, lectures on school gardens and floriculture illustrated with lantern slides have been given, and the desert has been made to blossom like the rose. Let others do likewise.

The Hartford School of Horticulture.

Whoever is interested in school gardens should secure the report of work done at this institution during the year of 1903. "The one hundred sixty-nine gardens, with the observation and fertilizer plots, together with the nursery and fruits, cover several acres of land. Twenty-two of the gardens belonged to adults, mostly teachers, twenty-seven to boys from the Watkinson Farm School, and one hundred twenty to boys and girls from the city."

The beds are of three sizes, 10x25, 10x30, and 10x40. This year only six free gardens were allowed to each school. The

other gardeners paid a tuition of $5.00 for first year's instruction, $7.00 for second, and $10.00 for third. One boy earned over $50 and secured a position as a gardener in the city. September 18 there was a school garden exhibit for which prizes were awarded by Rev. Francis Goodwin, who is president of the association. In the evening one hundred and fifty lantern slides of school gardens were shown. The report will tell the remainder of the good story.

THE COBBET SCHOOL GARDEN.

The garden of the Cobbet School in Lynn was visited by the writer in July, 1903. It contained hundreds of native plants transplanted from woods, fields, and meadows, by the pupils of the school under the guidance of Mr. Philip Emerson, the principal. The season was dry and the plants were evidently suffering for water and without care. Being planted under trees next to

the street their location seemed to be somewhat unfavorable to their survival. There was evidence of a great deal of work having been done. This garden received second prize from this Society.

The pupils of the school did some very interesting experimental gardening at their homes and other places, as shown by the enjoyable letters which they wrote to their principal and of which some are reproduced here.

The work has been started enthusiastically and successfully.

We are glad to include in this report Mr. Emerson's account of his garden and the use made of it.

COBBET GRAMMAR SCHOOL.

Philip Emerson, Principal.

LYNN, MASS., Oct. 19, 1903.

MR. HENRY L. CLAPP,
George Putnam School,

MY DEAR MR. CLAPP:

I send you herewith a statement of progress and plans for the Cobbet School gardens, as formal entry of specifications for the competition for school garden prizes for the current year.

We are expecting to complete the placing of soil for the wild garden strip beside the street fence before the school ere the frost stops work. In April, 1902, our yard was a waste of gravel and ashes, save for a few weeds and spears of grass. Now we have two strips of wild garden, about ninety and sixty feet in length and ten feet each in width. Over half is densely planted with wild shrubs, vines, herbs, and ferns. Only thirty feet is as yet unplanted. I herewith give a list of some two hundred thirty-one plants named in my Gray's Botany, which we have established on our grounds during the last year and a half. Many are represented by large clumps, like the panicled cornel, or by scattered specimens, like the New England aster. Some biennials may have to be re-established another spring. However, the list is a conservative statement, omitting all grasses, for instance, and weeds that were accidentally introduced and have not been labeled with the other plants. Some of the children have started wild gardens at home, and our labels suggest such common wild plants as will succeed best at home. Some plants have been set out by my boys at the primary schools they formerly attended.

Over five hundred square feet of space is planted with hardy garden perennials of many species and varieties, such as phlox, asters, lilies, Japanese anemones, bleeding heart, poppies, chrysanthemums, pentstemons, larkspurs, bell-flowers, peonies, and the like. Over one hundred

species and varieties in all. Several dozen children received roots of such hardy perennials as lily-of-the-valley and the pearl for home planting, and this work is to be extended another year.

Two beds and a long strip are devoted to spring and summer flowering bulbs, tulips, cannas, etc., and to a variety of the old-fashioned annuals. The pupils of several classes have grown such flowers in their home gardens.

A bed at the rear of the school was devoted to an economic garden. Cotton, tobacco, corn, peppers, sorghum, sugarcane, millets, sugar beet,

Making the garden.

and other roots, such as parsnip, alfalfa, cow peas, and other forage crop plants, etc., were grown in properly placarded plats. An exhibit was made at the Houghton Horticultural Society exhibition this fall of the products of this garden and those previously named, which secured the first prize, in competition with all other Lynn schools.

A vacant lot was secured for use by boys for individual vegetable gardens. Work was delayed through expectation that the lot would be sold. Finally it was opened in the middle of the drought. It had already been ploughed by a friend. It was divided into forty plots averaging one hundred fifty square feet in size, by the boys under the direction of the principal, and the plots were all assigned to girls and boys applying for

the privilege. The tough sods and stones were discouraging, and the lots of some boys with heavy home duties and living on the other side of the school district did not prove a success. In spite of the drought and the depredations of thieves others remained faithful and harvested crops from all seeds planted, their corn, vegetables, etc., being taken home and eaten. The coming year the work will be carried on at the school yard and at the children's homes, rather than on a vacant lot. Some forty dollars' worth of loam at eighty cents a double load have been delivered at the school, and will be used in the main for a long strip of school vegetable gardens. These are being prepared by eighth grade boys exclusively, and their gardening will run parallel to the fortnightly cooking school lesson of the eighth grade girls. Earnest and systematic effort will be made to have many pupils plant and care for a home garden of flowers and vegetables that shall be their very own. This was done systematically by only one entire room this year; though some pupils in other rooms took up the plan moved by the force of this example.

Our gardens are very new, indeed, and very far from what we intend to make them; but considering that even the soil for them had to be bought, and the holes for the soil picked out by main strength from the hard ashes and stones of the yard, the progress made since April, 1902, may, perhaps, be deemed worthy of some prize. If so, we shall highly prize the honor as a stimulus to all our pupils, and at once turn over the cash toward completing payment for the soil ordered for our vegetable gardens of another year.

I recall that you ask as to use made of school garden. The wild garden supplies material for nature study and for drawing lessons. The garden annuals and perennials are regularly drawn on for material for lessons in sketching, painting, and designing. Some of the exhibits testify to this. The gardens of economic plants supply illustrative material for the regular lessons in geography. For instance: wheat, barley, etc., which the children otherwise never see growing. The wild garden has the plants labeled with common name and brief descriptive remarks. The children observe their times and seasons and become familiar with their names. This proves a better plan than merely bringing picked flowers to the school rooms in connection with a calendar of flowers as they brought them in. However, the old ways are not discarded. They go on side by side with the yard garden, the one supplementing the other. Many citizens come to the garden to learn the names of wild flowers. For instance: one lady said she had a number of wild flowers that sprung up yearly at home from stocks her son transplanted years ago. She had not known their names until she learned them last spring at the school garden.

Yours very respectfully,

PHILIP EMERSON.

LETTERS ON PLANTING BY PUPILS OF THE COBBET SCHOOL, LYNN.

Dear Mr. Emerson;

Prescott and I have a garden up to my father's farm in Saugus. We go up some nights after school and weed and water it. It is about twelve feet long by five feet. I planted most of it myself because Prescott was sick. I planted most of it on April 20, 1903. I had planted a little lettuce at home before in a box, and then I transplanted it.

We call our garden the "White Feather Farm." When I told my father the name he said we would have to call it the "Black Feather Farm" if it didn't rain soon. We each got the seeds for nothing, and we sell what we raise. So far we have made about sixty-five cents together. Our largest radish is about one-half inch in diameter. We sell them two bunches for five cents (six in a bunch). We sell the lettuce three cents apiece, or two for five cents. We sell to the neighbors and our own families. We have beets also in our garden.

My father said that if we would weed and pick his corn and potatoes he would give us some; and if we would do it to the peas he would pay us. We are going to do it. We have seven rows of lettuce about a foot apart, and a row and a half near together. We have two rows and a half of large radishes and two rows of small radishes. We have two rows of beets. We have more land left and can get more if we want it.

The way we water is a queer one. There is a long hose attached to the house. One of us goes up and turns on the water while the other fills the watering pots. Then we go and water. We do this several times. I must close now,

Yours sincerely,

Paul B. Johnson.

This is the first year I ever tried planting vegetables, although they did very well. I planted my radishes April 13, and they were up April 20. In about a week after that they were so thick that I had to thin them out. This garden was in a box in the house.

I planted my outdoor garden about three weeks after this. I planted lettuce and radishes. Inside of two weeks they were up. They, too, grew very thick. The first I saw were two little leaves. Then as they grew other leaves forced their way up through the two first ones.

These (two) next leaves were very rough like a cat's tongue. The lettuce was the same at the start, but the first two leaves were larger.

Not long after this I pulled one up and saw that it had begun to form. Then in about a week I pulled another up and found that I had a radish.

I planted some sweet peas later and they are climbing up the wire very good.

Yours truly,

Harry Kane.

My home garden is getting along very well. About the month of April I planted some radish seeds, but I didn't have very good luck with them, because my father said I planted them too deep. I got out of patience waiting for them to come up, until one day I saw one coming up. That was the only one that came up out of that crop.

After a while I got a bed made out of doors and planted more seeds. They came up and we had some to eat. I planted another crop a few days ago out of doors, they are all up about an inch now.

I expect to have some radishes before long.

Last Sunday morning I planted some seeds in my box. They have not come up yet, but I expect they will be up by tomorrow. My bed I have out of doors is about three feet by two and a half feet.

My box is about two feet by half a foot. I keep it out of doors side of my other garden. I am having the best luck with my garden out of doors.

Yours truly,

ETHEL LUFKIN.

April 20 I begun my home garden that I am going to tell you about. The first thing I got my box ready which was about two feet by one foot. This I filled full of sifted dirt which I got in a vacant lot. I brought it home and sifted it thoroughly. Then so much was ready.

The next evening I went down town and bought half a dozen packages of seeds. I planted two of these packages, which contained pansies and asters. In about a week they popped their little heads above the ground. They were so small that I pulled many of them up thinking they were weeds or small pieces of grass. Each of them was composed of two little leaves. Sometimes when I went to water them they would break and fall to the ground.

Now they are growing beautifully and the pansies look like little trees. The asters are all in a row and look strong and healthy. This is how they look so far, but they have to grow lots more before they will be able to bear blossoms.

I shall be very glad to write more and tell you about them when they bear blossoms. You will hear about them later.

Yours truly,

OLIVE G. M. PILLION.

I planted my garden the first of May. I planted beans in rows that were two and one-half yards long. I planted twelve rows. They are up now about two feet and in a few weeks will be ready to eat. I planted corn in ten rows three yards long and now it is up a foot. Monday I planted one dozen and a half tomato plants and they are coming up good. If you would like to, come down and see them some night.

Yours truly,

J. O'CALLAGHAN.

Report of the Director of the Children's Gardens, Groton, Mass.

By Miss Elizabeth Sewall Hill.

This garden was started in May, 1902, by the Village Improvement Association. Miss Louise Klein Miller was director until June; then Miss E. S. Hill took it for the rest of the year. It was located in the Lawrence Playground, one hundred feet by ninety-seven feet, and worked

Groton Children's Garden.

by ten boys; each individual garden being ten by ninety-seven feet. It was a great success.

This year we have twenty-five workers, besides the twelve at West Groton. The garden is three hundred feet by sixty feet; two hundred feet for the boys and one hundred feet behind the boys for the girls' part with a path between.

Four of the plats were very wet. I let some of the boys plant them as they pleased and they proved very good.

I had two plans, one for the boys and one for the girls. All planted the same thing at the same time. As fast as one crop was harvested another took its place; turnip, cabbage, or carrot taking the place of spinach Nearly all had two crops of lettuce, three of radish, two of peas, and spinach cut back several times.

It was not expected that these gardens would be equally good. Nineteen were almost perfect, while the others were not quite as good. There were many reasons for this; some were on newly ploughed land, others on old; some boys had last year's experience, others were new to the work; some were eighteen years old, others eight; the rain ran in rivers through some gardens, rotting and carrying away seed, so that planting in these was delayed. I am glad to say the rain did not dampen the ardor of the children, they came rain or shine, blow high or low. When it rained too hard we would flee to the tool house and I would give them a lecture on fertilizers, birds, insects, or some kindred subject. The mud was so deep and sticky I felt as if walking on snowshoes.

We came out of it all right and had beautiful days to work. One boy went home one night with his potatoes in a wheelbarrow and a large bunch of nasturtiums on top. It was all he could do to push it along, but he was a proud boy. Everyone stopped to see his treasures.

The gardeners were told just how and what to plant, then if they wished to experiment they could. For instance: some tried hilling potatoes, others tried open culture; some put the potatoes in with fertilizer, others covered the potatoes first. Then they compared notes.

The head of each row was placarded so it was known where everything was.

These two gardens cost the Village Improvement Society just sixty dollars for tools and salary of director for this year. The children paid for nothing; all they do is to work.

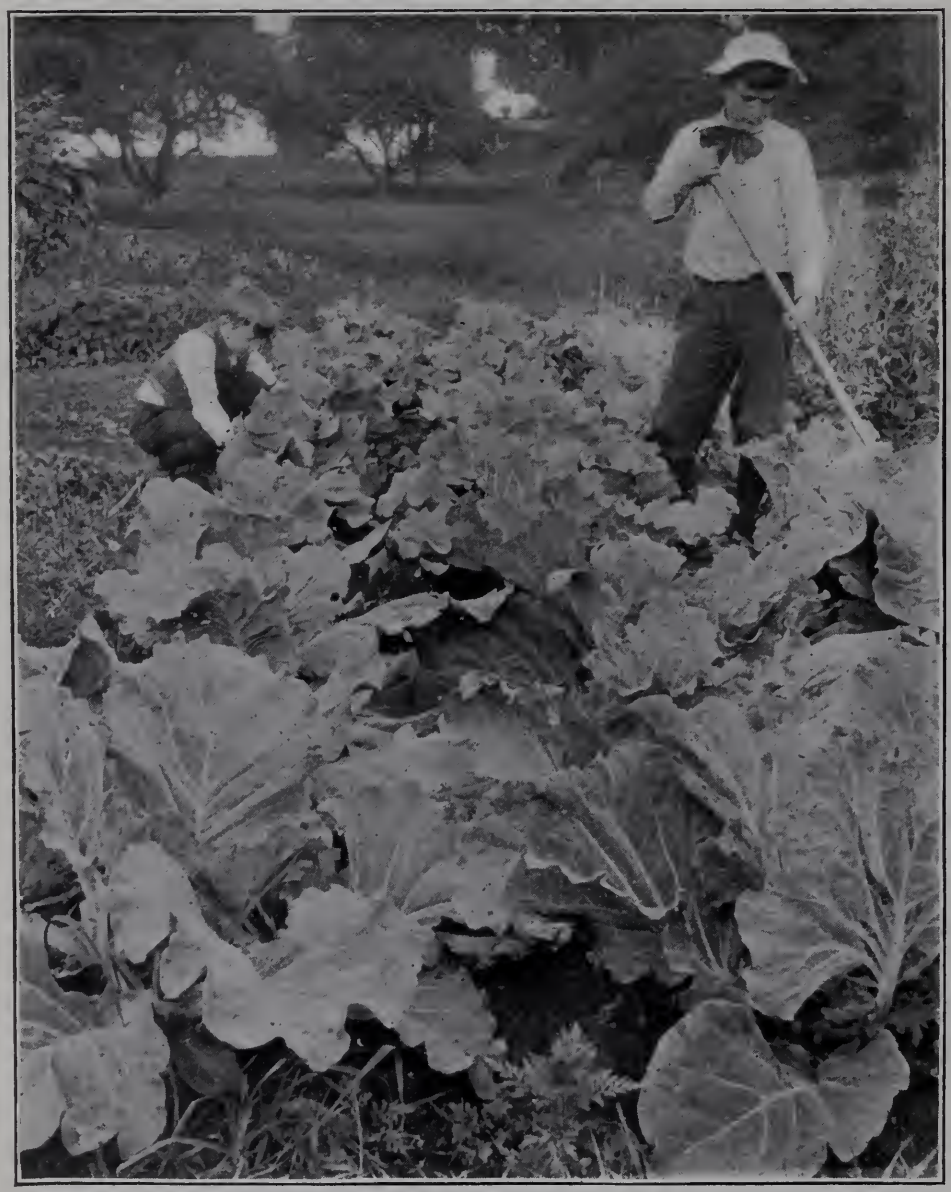
The judges met in the garden every month and gave marks for each garden. They were very strict, marking on the scale of one hundred, taking off ten for every fault. Weeds in paths, weeds in garden, too thick planting, vacant rows, rows out to edges, general appearance, etc., were marked. These marks grew better steadily, and at the last judging were excellent. Conduct also counted. If there was a tie between a boy who had behaved well and one who had not, the former would have the prize. The best gardens were worked by the best children. The steadiest and most punctual oftenest came out ahead.

The prizes were divided into three classes: for girls; for big boys; for small boys. Daniel Needham won the first prize of four dollars. He had a fine garden, although he had to plant his corn twice as it rotted on account of the dampness. Another boy had too much corn in his garden, so when this corn was two feet high Daniel transplanted sixteen hills, three stocks in each hill, and they all lived and bore fruit within a month.

The Farmers' and Mechanics' Club offered special prizes for the best display of vegetables, and of these D. Needham took the first ($3.00), Charles Morse, the second ($2.00), and Arthur Mason, the third ($1.00).

THE CHILDREN'S GARDENS AT WEST GROTON, MASS.

These gardens were started in May, 1903, by the Groton Village Improvement Association. The land was loaned by a citizen and is one hundred feet by fifty feet, and was divided among twelve workers. There are many more children who want gardens, and next year we will have



Results.

another one for girls. Thirty dollars were given by individuals; fertilizers and manure by farmers; and seed by the U. S. Agricultural Department, all but corn, beans, potatoes, turnips, and carrots, which I begged from storekeepers and farmers. A good many of the tomatoes were raised from seed and others were given.

The evening primroses were transplanted into the gardens. Our specialty is transplanting, and we have tried everything in the garden: sunflowers three feet high; corn two feet high; tomatoes, very large, with almost ripened fruit; squash, in fruit; turnips, parsnips, potatoes, and poppies; and everything has lived.

The children have all their produce to sell, eat, or give away. One boy last year supplied his family with vegetables all summer, and I should say from all accounts, has done the same this summer. The lettuce in one boy's garden would have netted him three dollars, if sold. The radishes in one girl's garden two dollars, beets two dollars, besides beet greens. They more often give away than sell.

After Fourteen Years.

Fourteen years ago, to be exact, March 22, 1890, in a paper entitled, "Horticultural Education for Children," which I had the honor to read before this Society, I made use of these words: "If there is so great an advantage in the establishment and use of school gardens, why has the matter not been attended to by the school authorities? It is well known that the best educational impulses come from without,—from philanthropic individuals or institutions. We need not go outside of Boston for proof of this. The sewing schools, cooking schools, kindergarten and manual training schools, now corporate parts of our school system, were started and carried beyond the experimental stage by private individuals. Mrs. Shaw and Mrs. Hemenway looked farther into the future than the Boston School Committee."

We realize the correctness of this opinion better for our experience during the past fourteen years, during which time nearly all the important garden work for the benefit of children has been undertaken by philanthropic individuals and associations. The Massachusetts Horticultural Society, the Massachusetts Civic League, the Twentieth Century Club, the Home Gardening Association of Cleveland, Ohio, The National Cash Register Company, the Hartford School of Horticulture, the Hale House Farm at Watertown, the Commercial Club of Indianapolis, the Civic Improvement League of St. Louis, the Ohio Students' Union, the Milwaukee Outdoor Art and Improvement Association, the Groton Improvement Association, Mrs. Henry Parsons at DeWitt Clinton Park, New York, the Women's Auxiliary of the American Park and Outdoor Art Association, Mr. W. J. Stevens at

Carthage, Ohio, and others began and sustained the work in their respective localities, while the educational authorities applauded doubtfully, or shuddered at the apparition of this new thing which to them looked much like another fad.

But, at last, after years of earnest advocacy of garden work, an impression has been made on some school authorities. In the report of the American Park and Outdoor Art Association, we read "that school gardens are being started in connection with fifteen or twenty normal schools, that officers of ten or twelve agricultural colleges are preparing school garden plans and courses and otherwise coöperating in the work, and that departments of public instruction all over the United States are displaying much interest and activity in the school garden movement."

"In Vermont the State Normal School at Johnson maintains a half-acre experimental school garden in connection with the training school. A portion of the garden is devoted to coöperative flower and vegetable growing by the pupils in the lower grades, the remainder to a potato crop in charge of grammar grade pupils, each of whom has 'one long row to hoe.'"

Excellent garden work is carried on at the normal schools in Boston and Hyannis.

Proposed Work.

Educators and philanthropists are being impressed with the educative and civilizing nature of garden work, and intend to make extensive use of such work, as evidenced by their letters to me.

Mr. R. H. Cowley, inspector of public schools in Carleton County, Ottawa, writes: "I am to some extent supervising the inauguration of a school garden movement in Canada, and during the summer it is likely that a group of five school gardens will go into operation in each of the following provinces: Ontario, Quebec, Nova Scotia, New Brunswick, and Prince Edward Island. A specially trained travelling instructor will have charge of each group and spend one day per week at each garden."

This calls for five instructors and the establishment of twenty-five gardens. And what are Massachusetts and Boston doing to show an appreciation of such work? The State Board of Education has done nothing yet. Boston last year started garden work

in connection with summer schools in six grammar school districts, under the charge of one instructor, new to the work. Evidently the appropriation was scarcely munificent, since an application to have the George Putnam School garden taken care of during the summer vacation, met with no response. So the one who established it several years ago and has sustained it since hired a gardener to care for it during the long vacation.

Dr. Mary D. Hussey of East Orange, N. J., writes: "I am planning to start one (a school garden) here on several acres of land my father owns opposite a large public school attended mostly by well-to-do children. I know a good deal about gardening, but little about managing children." She says there are 3000 school children in the town. She has already brought the matter before the school board, and desires to work up the school garden and then present its merits to the civic leagues and improvement associations in the state.

Mr. William W. Woollen of Indianapolis, in the report of the American Park and Outdoor Art Association says: "I am seeking to establish a garden of birds and botany for the benefit of our schools. I have forty-four acres which will be deeded to the city for the use of the public schools. Fifteen acres can be devoted to gardening, and here I would like to have growing every hardy plant known in this country."

School Gardens Discussed.

Wherever teachers' conventions have been held, the school garden topic has come up. Sometimes a whole session has been devoted to its consideration as in the case of the American Park and Outdoor Art Association and the great National Education Association. I never before was so much impressed with the importance of the subject in the estimation of progressive educators as when President Eliot asked me to speak on that topic at the meeting of the latter association in Mechanics' Hall, July 8, 1903, when about two thousand educators and others were present and evidently much interested, since the evening was very warm and the open cars and the beaches promised a much more comfortable evening than one in a hall.

Two thousand persons interested in school gardens and school grounds! I regret that I could not use my ninety convincing

lantern slides, illustrating children really at work, not simply posing, in order to add to the interest in the talk and the reality of the work described. The "incidental remark," that pupils in the ninth grade in the George Putnam School during eight years had studied ferns delightedly and therefore successfully, led President Eliot to say, "That, ladies and gentlemen, is the entire philosophy of the new education."

Mrs. H. L. T. Wolcott.

Oct. 8, 1903, Mrs. Wolcott, one of the oldest, most enthusiastic, and most cherished members of our committee died. In 1878 she began her work of interesting children in growing plants, and from that time on to the period of her last illness she continued her efforts, in one form or another, to interest children in nature studies. She was instrumental in having appointed, in 1878, a Committee on Window Gardening, of which she was chairman as long as that committee existed, 1894, when a new direction was given to the work of interesting children in plant life; and, accordingly, there was appointed a new committee called the Committee on School Gardens and Children's Herbariums, of which she was chairman one year, and a member until she died, with the exception of one year when she was traveling in the South, California, and the Sandwich Islands.

She was acquainted with many of the leading botanists of the country, including Galloway, Halstead, W. T. Brigham, formerly botanist of the queen of the Sandwich Islands, and others; and wherever she went she sang the praises of her committee, circulated its reports, and continually directed the attention of interested people to the educational and charitable work of the Massachusetts Horticultural Society.

Her whole life seemed to be a charitable mission. The value of her work for destitute girls is beyond estimation. Always engaged in some uplifting work, intolerant of calumny, impatient with seemingly unappreciative and callous hearts, an outspoken opponent of any commercial tendencies in this Society, and an earnest advocate of every educational and philanthropical effort made by it, she held its standard to the highest eminence and reflected its credit the length and breadth of our country, and even to the isles of the sea.

Children's Herbariums.

The herbarium specimens exhibited by the children, November 27 and 28, 1903, more than doubled the number shown in 1902. The certainty of receiving a money prize for every specimen accepted by the committee may have had some influence in bringing out eleven hundred specimens, over sixty of which were not accepted on account of imperfections and poor mounting, probably the result of hasty preparation.

The many finely mounted specimens always to be seen at the exhibitions show what is expected by the committee, and leave no excuse for presenting a second time, specimens hastily collected, pressed and mounted. Indeed, some of the very finest work has been seen in first exhibits, notably those of Dorothy Metcalf, Dorothea Dudley and Christine Clapp, Austin W. Cheever, Olive L. and Marion L. French at the last exhibition, and Vanessa Denton, Lucy D. Ellis, Arthur E. French, and Arthur C. Faxon at previous exhibitions.

When the specimens are naturally small these exhibitors have mounted several on the same sheet, knowing that a specimen one or two inches high looks lonesome on an area of white paper 11½ by 16¼ inches. When they have thus placed four or five specimens on the same sheet, they have avoided a parallel position of the stems and made them radiate like the sticks of a fan. They have preserved all the natural curves of grasses and sedges, have been careful in choosing leaf sprays so as to present good forms on the mounting sheet, and have been remarkably successful in preserving the natural colors of blossoms. All this requires much painstaking, which is one of the objects of the committee in holding the exhibitions.

Only those who can remember the beginning of this work in 1891 can realize how great the improvement has been in regard to the points named above.

Never before in the history of the Society has there been exhibited so large and fine a collection of mosses and lichens. They presented an unusual opportunity to botanists to become acquainted with these comparatively little understood plants. Dr. Grout and other competent bryologists gave their valuable services in helping to name the rarer specimens.

These young girls, Christine and Dorothea Clapp, not yet beyond school age, have done a work quite scientific in character and one that would do credit to a professional botanist, bryologist, or lichenologist. Sixty-three different kinds of mosses, with a

Aster laevis: Geo. Putnam School wild garden.

smaller number of lichens, carefully chosen, especially in regard to fruit and vigorous growth, furnished a most valuable object lesson, especially to all those interested in such plants.

Mrs. P. D. Richards, whose fine exhibits of wild flowers and

mosses for a score of years have done so much to create and sustain an interest in such plants, came in on crutches in company with interested friends to see these fine collections, as it were to say, "How do you do?" to each old acquaintance and call it by name. If this illustration of the influence of mind over matter has nothing to do with the doctrine of Christian science, it certainly shows how strong and abiding an interest a person, man or woman, boy or girl, may have for some form of Nature's works; and that is reason enough for interesting children in such things. Nature's works furnish the greatest and purest refreshments to the spirits of man. There is no happier or more contented man than the naturalist.

Prizes and Gratuities Awarded for School Gardens and Children's Herbariums.

SCHOOL GARDENS.

George Putnam School, Roxbury, first prize	$15 00
Cobbet School, Lynn, second prize	12 00
Children's Gardens, Groton, third prize	10 00

CHILDREN'S HERBARIUMS, NOVEMBER 27 AND 28.

Austin W. Cheever, Mattapan, ferns and flowers,	$10 70
Dorothea Clapp, Dorchester, mosses,	7 50
Margaret Dow, Brookline,	7 00
Ruth Robinson, Watertown,	6 50
Dudley Clapp, Dorchester, leaf sprays,	5 25
Lois A. Leavitt, Ayer,	3 50
Richard Murdoch, Roxbury,	3 05
Christine D. Clapp, Dorchester, lichens,	2 50
Dorothy Metcalf, West Roxbury,	2 30
Marion L. French, Sudbury,	2 25
Olive L. French, Sudbury,	1 80
Joseph Murdoch, Roxbury,	1 75
Gladys Mason, Groton,	1 30
W. C. Swain, Roxbury,	60
Barbara Swain, Roxbury,	50
F. W. Swain, Roxbury,	45
C. D Swain, Roxbury,	25
D. W. Swain, Roxbury,	25
Total for Gardens and Herbariums,	$94 45

The amount of money appropriated by the Society for the use of the committee was:

For Prizes and Gratuities	$100 00	
For Current Expenses	50 00	$150 00
The Committee has expended		113 25
Balance unexpended		$36 75

HENRY L. CLAPP, *Chairman*, Roxbury,
MISS KATHARINE W. HUSTON, Roxbury,
WILLIAM P. RICH, Chelsea,
CHARLES W. JENKS, Bedford,
HENRY S. ADAMS, Boston,
W. E. C. RICH, *Secretary*,
99 Moreland Street, Roxbury, Mass.

Committee on School Gardens and Children's Herbariums.

REPORT

OF THE

COMMITTEE ON NATIVE PLANTS

FOR THE YEAR 1903.

By Charles W. Jenks, Chairman.

The Schedule was arranged as usual with prizes offered for native plants on five dates, for cultivated native plants on three dates, and for ferns on one date.

Your committee has been much disappointed in the number of collections shown; thirty-seven prizes were offered and for these only twelve exhibits were made.

We notice with regret the absence of several of our former contributors and as yet their places have not been filled. We are in doubt as to the reason of the decrease of exhibits, whether it has been caused by the less accessible location of the new hall, or by the decrease in the amount of the prizes offered, or the natural result that at intervals of a few years one set of exhibitors drop out and later their places are filled by others. We have thought best to reduce the number and increase the amount of the prizes for the ensuing year and hope to see again the old names and faces as well as new ones.

The exhibits were all of high quality, carefully named, and presented in good condition. They were creditable to the Society and the exhibitors and evidently appreciated by the visitors to the hall.

The usual number of rare and interesting specimens were shown; of these it seems desirable to record *Cnicus horridulus*

from Maine, shown by Edward S. Colburn, the first verified report of that species from the state.

No exhibits were made in the class of cultivated native plants and the former contributions of Miss Noyes and our late Secretary, Mr. Manning, were much missed.

The regular offer of the Society has been "To the exhibitor who gains three or more first prizes during the season, the Appleton Silver Medal"; "To the exhibitor who gains the next greatest number, the Appleton Bronze Medal"; Edward S. Colburn won three first prizes and is awarded the Silver Medal. Mrs. Arthur Clark won one first prize, one second, and one third; Miss Isabelle C. Shattuck won one first; your chairman is of the opinion that either a bronze medal should be awarded to both Mrs. Clark and Miss Shattuck, each having won one first prize, or that no bronze medal should be given as no single exhibitor gained the next greatest number; the others of the committee do not agree with me and think the medal should be given Mrs. Clark for having obtained three prizes while Miss Shattuck had only one. I can not myself see how this decision can be arrived at from the wording of the Schedule but as the majority vote of the committee has been in its favor the Appleton Bronze Medal is awarded Mrs. Arthur Clark. In the Schedule for 1904 we have endeavored to prevent a similar recurrence.

PRIZES AND GRATUITIES AWARDED FOR NATIVE PLANTS.

1903.

May 9.

Native Plants.—Collection of thirty bottles of named species and varieties, one bottle of each.

1st., Edward S. Colburn, $4.

June 6–7.

Native Plants.—Collection of thirty bottles of named species and varieties, one bottle of each:

1st., Mrs. Arthur Clark, $4; 2d, Mrs. W. S Eager, $3; 3d, Edward S. Colburn, $2; 4th, Miss Margaret Titcomb, $1.

JULY 11.

NATIVE PLANTS.—Gratuity for collection;
Edward S. Colburn, $2.

JULY 18.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:
1st, Miss Isabelle C. Shattuck, $4; 2d, Edward S. Colburn, $3; 3d, Mrs. Arthur Clark, $2.

JULY 25.

NATIVE FERNS.—Collection of named species and varieties:
1st, Chester C. Kingman, $5; 2d, Miss Isabelle C. Shattuck, $4; 3d, Misses E. A. and M. S. Doran, $3.
Gratuity.—William Whitman.
Display of ferns not entered for prize, $2.

AUGUST 8.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:
1st, Edward S. Colburn, $4; 2d, Mrs. Arthur Clark, $2.

SEPTEMBER 24.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:
1st, Edward S. Colburn, $4; 2d, Miss Mildred E. Bliss, $3.

Appleton silver medal, for gaining three first prizes during the season, awarded to Edward S. Colburn.

Appleton bronze medal, for gaining the next greatest number; awarded to Mrs. Arthur Clark.

Amount appropriated for the use of the committee		$125.00
Amount of Prizes, ...	49.00	
Amount of Gratuities, ...	4.00	
Cost of Medals, ...	10.05	63.05
Balance unexpended		61.95

CHARLES W. JENKS,
WILLIAM P. RICH,
MISS MARY RODMAN.
} *Committee on Native Plants.*

REPORT

OF THE

COMMITTEE ON FORESTRY AND ROADSIDE IMPROVEMENT

FOR THE YEAR 1903.

By James Sturgis Pray, Chairman.

To the President and Members of the Massachusetts Horticultural Society:—

The Committee on Forestry and Roadside Improvement respectfully report:

The principal work carried on by this committee has during the past year continued to be the gathering and arranging for ready reference and useful deduction all possible information with regard to the distribution, treatment and condition of the roadside trees of this Commonwealth "with a view to publishing a report of these conditions, coupled with recommendations to the tree wardens and others having to do with the preservation and increase of the arboreal beauty of our roadsides."

The collating, tabulating and mapping of the facts brought out in the replies to our widely distributed circular have now been completed. The arrangement of a considerable part of the information (that relating to work done, condition of trees, soils, diseases and pests, and effective ways in which they have been combated; different forms of tree-guards and their relative merits as shown by experience; injurious effects of electric wires, gas, and pavements; advertisement placards; noteworthy individual trees; real estate values as affected by planting or removal of roadside

trees; the celebration of Arbor Day; work in the schools; town by-laws relating to trees, etc.) was set forth in the last report of this committee, and its special value shown. The tabulating and mapping, however, of the records of distribution were not at that time completed. By these now completed tables, one can at a glance find the record, so far as our information goes, for any of the 81 species of trees listed in our circular in any one of the 353 cities and towns of the Commonwealth from which we have heard. That is to say whether the species grows in the given town wild or planted or both, whether in either case it is common, frequent, occasional, or rare, or whether it does well or not. In a series of outline maps, one for each species, the same information has been shown graphically in color.

It was hoped before the end of the year to have completed the detailed report upon all this valuable material. The present writer, however, upon whom the task devolved of draughting this detailed report has been unable, as yet, through pressure of other duties to give to the work the very considerable time its proper accomplishment will require. Moreover, although the amount of information is already great, and the replies are from towns well distributed over the state, nevertheless, a more complete response to certain of the inquiries set on foot by the committee is very much to be desired before it be attempted to publish a report embodying careful generalizations and deliberate recommendations. On the whole then the uncertainty of being able in the near future to give to the completing of this task, including the collection of further material and the draughting of the report, the time it will require, moves the writer to accompany this annual statement with all the material already in hand, leaving to the Society to carry the matter further or not, as it may see best. He believes that even in its present form it will be of service to members of the Society and others interested in our roadside trees, and he recommends that it be kept accessible in connection with the Society's library in such way as may be determined by the Librarian or the Library Committee. Should the writer later see his way clear to taking the matter up again with a reasonable prospect of completing the undertaking, if the Society has meanwhile made no other disposition of it, he will at such time come to the Society for the material. It should be

said moreover that in its present form the material has already been of service to, among others, the Massachusetts Highway Commission who have now undertaken to set out trees along the state highways, and it will, if kept accessible, continue to be of aid to them.

As has been true in previous years, a still more important work of the committee may fairly be said to have been the correspondence with tree wardens and others and helping them constantly with information and advice. In this work the committee has labored not only through the medium of correspondence as heretofore, but has given to tree wardens actual instruction on the ground in roadside thinning and pruning. Of the many cases this year of this individual help, one of the most noticeable was the aid given by this committee through one of its members, Mr. James H. Bowditch, to the tree warden of Weston. Mr. Bowditch visited Weston, made a very thorough investigation of the facts touching upon the then lively controversy between the tree warden, the Board of Selectmen, the County Commissioners, and the Newton Street Railway Company, and afterwards made a report which accomplished the saving of, among other good trees, two of the finest elms in the state, which would otherwise have been unnecessarily cut in the process of widening the boulevard through that town. This correspondence with tree wardens, which has during the last six years occupied so much of the time of the writer, may, he thinks, now very properly be left to the secretary of the Massachusetts Forestry Association, a salaried officer, one of whose special functions is to actively engage in such aid.

The committee has continued to distribute as occasion has offered the propaganda of the Society for the Protection of Native Plants and the American Park and Outdoor Art Association. It has further actively coöperated with the Massachusetts Forestry Association and the Appalachian Mountain Club in supporting the former's bills before the Massachusetts General Court providing for the appointment of a state forester and the better protection of forest lands; with the Society for the Protection of New Hampshire forests in its efforts to secure effective legislation looking to the eventual establishment of a forest reservation covering

the greater part of the White Mountain region; with the International Society of Arboriculture in its efforts to create wider spread interest and more active work in rational tree planting in different parts of the state and country; and with the Outdoor Art League of California in supporting the bill before Congress providing for the permanent preservation of the famous Calaveras Groves of Big Trees in California.

Respectfully submitted for the Committee,

JAMES STURGIS PRAY,
NATHANIEL S. SHALER,
HENRY S. HUNNEWELL,
JAMES H. BOWDITCH,
HARLAN P. KELSEY.

Committee on Forestry and Roadside Improvement.

REPORT

OF THE

COMMITTEE OF ARRANGEMENTS

FOR THE YEAR 1903.

By Joseph H. Woodford, Chairman.

The year just closing has been one of about the usual importance to our society and the exhibitions held during the season have been largely attended.

The halls have been arranged for the best accommodation of exhibitors and the public and we do not hear of any complaint from any source whatever.

We are very glad to chronicle the fact that fifty new folding tables have been constructed by our efficient janitor, Jackson E. Hall, of such good dimensions as to better accommodate exhibitors and not detract from the appearance of the halls when used.

At some of our large exhibitions we feel the need of additional glassware, and would suggest that the Treasurer consult with the janitor as to our needs and then proceed to supply the quantity required to make up the deficiency during this coming winter.

The fund placed to the credit of your committee for extraordinary expenses has been expended in such a manner as to redound to the best interests of the society.

We are glad to be able to express our appreciation of the manner in which the daily newspapers of the city have treated our exhibitions by liberal notices and photographic illustrations, and we sincerely hope that this custom may continue under the new management just being inaugurated by our society.

We are glad to be able to welcome new exhibitors to our exhibitions, thus filling up the gaps occasioned by the dropping out of some of the veteran exhibitors.

We append an account of the money received for entrance fees at the three exhibitions at which admittance was charged.

Spring Exhibition, March, ...	$637.75
Annual Flower Show, September, ...	631.75
Chrysanthemum Show, November, ...	788.00
	$2057.50

All of which is respectfully submitted.

JOSEPH H. WOODFORD,
WARREN H. HEUSTIS,
PATRICK NORTON,
ARTHUR H. FEWKES,
KENNETH FINLAYSON,
E. W. WOOD,
ROBERT FARQUHAR.

Committee of Arrangements.

REPORT OF DELEGATE

TO THE

STATE BOARD OF AGRICULTURE

FOR THE YEAR 1903.

Some changes have been made this year in the officers of the State Board of Agriculture. Hon. J. W. Stockwell, the Secretary, resigned, to take effect July 1, and J. Lewis Ellsworth of Worcester was elected to fill the position. Mr. Ellsworth seems well fitted for the place, being a practical cultivator of experience, of excellent executive ability, and a genial man making hosts of friends.

P. M. Harwood of Barre was elected general agent of the Dairy Bureau to succeed G. M. Whitaker of Boston. Mr. Harwood, having served as assistant to his predecessor, was well qualified for the position and I believe is giving general satisfaction.

The Winter meeting of the Board at Athol, December 1, 2, and 3 was a great success; it was one of the largest and most enthusiastic of its meetings.

The program which embraced subjects of practical interest to cultivators was as follows:

Progressive and Profitable Poultry Culture; by Prof. Arthur A. Brigham.

A Forest Policy for Massachusetts; by Dr. B. E. Fernow.

The Value of Art and Skill in Industry; by Hon. Carroll D. Wright.

Outlook for New England Agriculture; by Dr. George M. Twitchell, Editor of the Maine Farmer.

The Successful Type of Horse that may be profitably raised by New England Farmers; by Henry W. Smith.

The Manurial Problems in Soil Renovation and Improvement; by Dr. Homer J. Wheeler.

I would again call attention to the Hatch Experiment Station at Amherst and its work, particularly to the entomological department. Now that insect pests are so abundant it should be remembered that the professors at that institution are ready to answer inquiries for information. When it is considered how rapidly the San José scale is increasing in eastern Massachusetts it would be well for owners of small estates in this section to apply at once for remedies.

Winter is the time to destroy this pest.

WILLIAM H. SPOONER,
Delegate.

December 31, 1903.

REPORT OF THE INSPECTOR

TO THE

STATE BOARD OF AGRICULTURE

FOR THE YEAR 1903.

To the State Board of Agriculture,

GENTLEMEN :—In response to your directions that I inspect the Massachusetts Horticultural Society I make the following report.

The society held meetings with addresses by persons proficient in horticulture, and skilled matters immediately relating thereto, during the winter and spring months, in excess of the requirements of the Board.

The appropriations for prizes and gratuities for the year were :—

For Plants,	$1,500.00
" Flowers,	1,875.00
" Native Plants,	125.00
" Fruits,	1,275.00
" Vegetables,	900.00
" Gardens, Greenhouses, etc.	375.00
	$6,050.00

The society has special funds the income from which is used to encourage improvements in fruits, plants and flowers, vegetables, etc. These have been given by public-spirited citizens, whose confidence in the society resulted in encouraging liberality in a worthy cause. The H. H. Hunnewell prizes to encourage the

establishment of "Estates of not less than three acres" is a noteworthy act that will always associate that distinguished horticulturist with this society.

The names of F. B. Hayes, J. D. W. French, W. J. Walker, J. S. Farlow, Josiah Bradlee, Marshall P. Wilder, J. Lewis Russell, H. A. Gane and others, who have established funds in the keeping of the society will always be remembered by the good they have done to advance horticulture. The degree of usefulness of these funds is to be gauged by the intelligent and up-to-date care with which they shall be administered in the future.

A noted act of the society during the past year has been the unanimous adoption of a new set of By-laws; the Act of the Legislature incorporating the society in 1829 forming its Constitution, with amendments thereto made by more recent Acts of the General Court. The growth of the society in membership and financial standing has made the changes advisable.

The society has held numerous free exhibitions throughout the past year of an educational and horticultural character; and has also held three extensive pay exhibitions in March, September, and November, which attracted large crowds who have been gratified, educated, and encouraged on this line of work.

The society has a large and useful plant for its work, in a centre of the city of Boston that is developing fast. Every encouragement that the State can give to this child of hers in horticulture cannot be misplaced. It would be a case of helping the worthy who are helping themselves to advance.

Respectfully submitted,

FRANCIS H. APPLETON,

Inspector.

REPORT

OF THE

COMMITTEE ON LECTURES AND PUBLICATION

FOR THE YEAR 1903.

By AARON LOW, Chairman.

The Committee on Lectures and Publication presents the following summary of its work for 1903.

A course of eight lectures has been delivered, as follows:

January 10. Remunerative Outdoor Occupations for Women. By Miss Mary E. Cutler.

January 17. Some Experiences and Observations in Berlin by a Massachusetts Farmer. By Benjamin P. Ware.

January 24. Systematic Pomology. By Prof. F. A. Waugh.

January 31. What the United States Department of Agriculture is doing for the Farmer. By Prof. C. S. Walker.

February 14. Characteristics of some Southern Trees (with stereopticon illustrations). By Miss Emma G. Cummings.

February 21. The Apple as a Money Crop for New England; Its Culture and Preparation for Market. By F. C. Richards.

February 28. The Demands on Agriculture in the Present Century; How shall we meet them? By Hon. J. W. Stockwell.

March 14. Parasitic Fungi of Field and Orchard. By Prof. L. R. Jones

The annual Schedule of Prizes was issued, as usual, in January and the following numbers of the Transactions have been published and distributed during the year.

1902, Part I, Issued February 16.
1897, " III, " " "
1902, " II, " July 6.
1903, " I, " " 7.

AARON LOW,
JAMES H. BOWDITCH,
E. W. WOOD.
} *Committee.*

REPORT

OF THE

SECRETARY AND LIBRARIAN

FOR THE YEAR 1903.

The seventy-fourth year of the Society's existence has been marked by an interest well sustained in all the various departments of its work. There appear to be no lessening of devotion to the objects for which the institution was founded and no weakening in the active promotion of its aims. The experience of the past year indicates a renewed enthusiasm and a hopeful outlook for the future.

The various exhibitions have been, as usual, creditable to the Society and public interest has been fully up to the average of past years.

An important event of the year has been the unanimous adoption of a new system of government to go into effect January 1, 1904, superseding the present Constitution which in its main principles, at least, though with occasional revision and modification of details, has been the source of authority since 1835.

It is of interest to note that the new By-laws in which the management of the affairs of the Society is entrusted to a Board of Trustees, resembles in this respect the first constitution adopted in 1829.

The publications of the Society have been brought up to date during the year with the exception of the Accessions to the Library, issued as Part III of the Transactions. These are now

six years in arrears and the value of their continued publication is somewhat doubtful. The titles and dates of issue of the publications of the year are as follows:

January 3.	The Schedule of Exhibitions and prizes,	48	pages.
February 16.	Transactions, 1902, Part I,	110	"
" 16.	Transactions, 1897, Part III, containing the accessions to the library for that year,	57	"
July 6.	Transactions, 1902, Part II, with 23 plates,	200	"
" 7.	Transactions, 1903, Part I, with one plate,	156	"

Numerous specimens of fruits and flowers have been brought in for identification, all of which have received attention and, with the assistance at times of members of the fruit and flower committees, most of them have been satisfactorily named.

Concerning the library much might be said of its condition and needs which would be but a repetition of previous reports. Its claims upon the society and its value in its work are so apparent that confidence is assumed that it will be properly taken care of. The income of the John S. Farlow Fund ($100) and of the John D. Williams French Fund ($200) has been expended in the purchase of books, while the society's appropriation ($225) has been used for the maintenance of the periodical list and for binding.

On June 26 there was received from the family of the late Robert Manning a large number of books and pamphlets, among which were some desirable additions to the library, especially of numbers of serial publications and reports needed towards the completion of sets.

The preparation of a list of the duplicate material has been undertaken during the year and is nearly completed, thereby rendering accessible for sale or exchange a large number of publications which have been accumulating for years. By this means many additions to the library can economically be made.

In the absence of a report from the Library Committee a list of some of the more important accessions to the library during the year is appended.

Budd. American Horticultural Manual. Parts I, II.
Cogniaux et Goosens. Dictionnaire Iconographique des Orchidées. Parts 48–50.
Collins, Holden and Setchell. Phycotheca Boreali-Americana. Fasc. 21, 22.
Earle. A Third Pot-Pourri.
Ely. A Woman's Hardy Garden.
Fernow. Economics of Forestry.
Flora Batava. Parts 337–344.
Florilegium Harlemense. Part 20, completing the work.
Fox. Tree Planting on Streets and Highways.
Galloway. Commercial Violet Culture. 2d. Ed.
Going. With the Trees.
Hillebrand. Flora of the Hawaiian Islands.
Hooker. Journal of a Tour in Iceland in the Summer of 1809.
Keeler. Our Northern Shrubs and how to identify them.
Leavitt. Outlines of Botany.
Leyland. Gardens Old and New. Vol. 2.
Locke. Outlines of Botany. Boston 1819.
Lyon. Repulse Bay. London 1825.
Michael. Führer für Pilzfreunde.
Newell. Irrigation.
Nichols. English Pleasure Gardens.
Parkhurst. Trees, Shrubs and Vines of the Northeastern United States.
Rabenhorst. Kryptogamen-Flora von Deutschland, Osterreich, und der Schweiz. 2te Aufl. IV Band, III Abtheilung, Lief. 38, 39.
Rafinesque Atlantic Journal and Friend of Knowledge.
Reichenbach. Icones Floræ Germanicæ et Helveticæ. Tom 22, Decas. 31–33, Tom. 24, Decas. 1, 2.
Robinson C. M. Improvement of Towns and Cities.
Robinson, Wm. Alpine Flowers for Gardens. 3d Ed.
Roth. A First Book of Forestry.
Sargent. Trees and Shrubs, Vol. I. Parts 1, 2, 3.
Small. Flora of the Southeastern United States.
Triggs. Formal Gardens in England and Scotland. Part III. 72 Plates.
Urban. Symbolæ Antillanæ. Vol. III. Fasc. II.
Ward. The American Carnation.
Waters. Ferns; A Manual for the Northeastern States.
Waugh. Systematic Pomology.
Weed. The Flower Beautiful.
White. The Forest.
Wood. Natal Plants, Vol. 3. Part IV.

William P. Rich,
Secretary and Librarian.

Necrology — 1903.

Franklin Gordon Dexter was born in Boston, December 19, 1824, and died there January 1, 1903. He became a life member of the Massachusetts Horticultural Society in 1865.

Mr. Dexter was prominent in the business and financial circles of Boston for many years. He first went into business in Mr. Austin's counting rooms and later became associated with and was a partner of Wm. Appleton & Co., China merchants. In connection with this firm he made two or three voyages to China and was among the first Americans who went to Japan after the treaty with that country in 1858. On the death of Mr. Appleton in 1862 he became a partner in the firm of Samuel Hooper & Co., successors of Wm. Appleton & Co., remaining until the death of Mr. Hooper, about 1875, when the firm was dissolved.

He took an active part in the building of the Union Pacific Railroad and had interests in other Western railroads which were being built at that period. These interests he continued until a few years before his death when he gradually retired from active business.

Mr. Dexter was instrumental in introducing into this country from Japan several notable plants. He brought over in 1861, in a Ward case, by Ship "Nabob" from Shanghai, *Lilium auratum*, the Golden Banded lily of Japan, which had been collected by Dr. George W. Hall. Francis L. Lee received it and turned it over to Spooner and Parkman who propagated it and exhibited it at the Massachusetts Horticultural Society, July 12, 1862, receiving therefor a Silver Medal. C. M. Hovey recognized it as a new species and suggested for it the name *Lilium Dexteri*. In the meantime it had been introduced by Veitch into England and

flowered about the same time as the American plants and was promptly named *Lilium auratum* by Lindley, antedating Hovey's name by a few weeks only.

Mr. Dexter brought over at the same time *Lonicera Japonica*, the Japan honeysuckle, *Ampelopsis tricuspidata*, the Japanese or Boston ivy, and *Malus Halliana*, now commonly known as Parkman's Crab and which stood until two years ago in Mr. Parkman's garden.

Prof. C. S. Sargent states that the origin of this last species is still uncertain and that no other specimen has since been sent to the United States or Europe from Japan; all the plants now in culti ation having been propagated from the one brought home by Mr. Dexter.

Included in Mr. Dexter's importation were *Rhododendron brachycarpum*, still a very rare plant in gardens, *Retinispora pisifera aurea* (probably the first in this country), and a tree now in Prof. Sargent's possession, *Thuyopsis dolobrata*. This last had been introduced into England some two or three years earlier by an English naval officer.

Prof. Sargent also states that so far as he knows this was the first importation of plants made directly from Japan to the United States.

By Gordon Dexter.

Frederick L. Harris of Wellesley, Massachusetts, died January 11, 1903. He became a member of the Society in 1865. A memorial of his life was published in the Transactions for 1903, Part I, page 24.

William Henry Sherman was born in East Cambridge, Massachusetts, July 29, 1841, and died in Boston, January 11, 1903. He became a life member of the Society in 1899.

Mr. Sherman was a business man of large interests and a member of the firm of Parker, Wilder & Company of which Marshall P. Wilder of horticultural fame was also a partner.

Mrs. Rebecca Caroline Ames was born in St. Louis, Missouri, December 30, 1838, and died in Boston, January 21, 1903. She became a life member of the Society in 1899. Mrs. Ames was the wife of the late Frederick L. Ames of North Easton, whose interest in horticulture and in the Massachusetts Horticultural Society is still held in pleasant remembrance.

Gardiner G. Hammond was born in Boston, on Beacon Hill, now a part of the State House grounds, November 19, 1832, and died at his home on Beacon Street, Boston, March 3, 1903. He became a life member of the Society in 1864. Mr. Hammond was never in any business but lived on the income of his invested, inherited property. About 1860 he bought at New London, Connecticut, four miles from the town, and on the shore of Long Island Sound, the country place of a Mr. Williams, an old whaling merchant of that town. Here he passed his summers with his family for many years, living in the winter in Boston. From year to year up to 1868 he continued to buy parcels of land adjacent to his estate until he had acquired about 250 acres. While he lived at Walnut Grove Farm (the name of the New London place) he engaged extensively in farming of all kinds as a gentleman farmer. He had very fine fruit, flower, and vegetable gardens, cultivating the land highly. He also raised cows, horses, pigs, chickens, and dogs and planted extensively trees and shrubs.
By Gardiner G. Hammond.

Benjamin Grey was born in Ayton, Yorkshire, England, August 7, 1846, and died in Malden, Massachusetts, March 5, 1903. He became a life member of the Society in 1887. A memorial of his life was given in the Transactions for 1903, Part I, page 161.

Oliver R. Robbins was born in Roxbury, Massachusetts, April 19, 1830, and died in Weston, March 5, 1903. He became a member of this Society in 1886.

His family moved to Weston in 1832. Mr. Robbins served a term as selectman of the town and was an active member of the committee on the public library for many years. He carried on farming in its various branches, making a specialty of strawberry

culture, and took great pleasure in exhibiting his products at the horticultural exhibitions of the Society, winning many first prizes as a reward for his skill.

By Samuel H. Warren.

Oren H. Peck, formerly a resident of Melrose, Massachusetts, died in Denver, Colorado, April 2, 1903.

He became a member of the Society in 1866 and, during the years 1865 to 1870, was a frequent exhibitor of flowers at its exhibitions and was the recipient of numerous prizes attesting his skill and interest in horticultural work. He was a member of the Committee on Flowers in 1866, and in 1869 was awarded a First Class Certificate of Merit for four new varieties of *Coleus*.

Although his last years were spent in a distant state he always held a lively interest in the Massachusetts Horticultural Society and looked back with sincere pleasure upon the former years of active work in the Society.

Charles U. Cotting was born in Boston, May 13, 1831, and died there April 3, 1903. He became a member of the Society in 1896.

Seth Weston was born in Duxbury, Massachusetts, November 9, 1824, and died in Revere, April 5, 1903. He became a life member of the Society in 1870.

At an early age he learned the trade of a mason and coming to Boston in 1844 entered the employ of Standish & Woodbury, contractors and builders, where he remained for twenty years, the last twelve of which as a foreman.

In 1865 he formed a partnership with George F. Shephard, under the firm name of Weston & Shephard. This partnership lasted about twenty years, during which the firm erected many public and private buildings in Boston and vicinity, notably the Museum of Fine Arts in Copley Square and the residence of the late Frederick L. Ames on Commonwealth Avenue.

He moved to Revere about 1870 and after retiring from business devoted himself to his real estate interests and took an active part in the public affairs of the town for twenty years.

His interest in horticulture was his "play." He was a hard worker at his business and when he came home from the city he sought recreation in his garden and among his trees. He employed very little outside assistance in caring for his orchard, preferring to labor himself when he could. All of his trees he set out himself or personally supervised the work. He was most successful with pears, although he had a variety of apple, plum, peach, and cherry trees, besides a great many grape vines.

He was a frequent exhibitor of his products at the exhibitions of the Massachusetts Horticultural Society in the 70s and received many prizes. He experimented somewhat with strawberries and at one time had the largest bed of Sharpless strawberries in Revere. His first orchard was on Mill Street, Revere, and his last on Proctor Avenue where he lived for eighteen years. After he himself ceased to exhibit, he took great pleasure in attending the exhibitions at Horticultural Hall and at other places. Some twenty years ago he took several quite extended journeys, going as far south as Florida and west to the "Rockies", and retained to the last the memory of the vegetation as he saw it in the different localities.

As he loved fruit so he loved animals. In disposition he was retiring, never seeking prominence, though at various times he occupied prominent positions entirely unsought. He detested vice of all kinds and his contempt for a dishonest person was of a most positive character. In his generosity he frequently went almost without necessities himself in order to help some other person or some "good cause."

His affections were deep though not demonstrative and when he died he left five children to revere his memory, and a record of a stainless, upright, and useful life.

By F. Irving Weston.

William Sumner Appleton was born in Boston, January 11, 1840, and died there April 28, 1903. He became a life member of the Society in 1867.

He owned an estate of 360 acres in Newton, Massachusetts, and was much interested in the cultivation of fruits and vegetables and especially of trees for which he had a great regard.

Mr. Appleton was a student of genealogical, numismatic, and heraldric subjects and a recognized authority upon them.

Hon. Virgil Chase Gilman was born in Unity, New Hampshire, May 5, 1827, and died in Nashua, April 28, 1903. He was admitted a member of the Society in 1896. Mr. Gilman was educated in the public schools of Lowell, Massachusetts, and moved to Nashua in 1843 where he resided ever after.

In 1851 he began the manufacturing of cards and glazed paper, being among the first in this country in that business, and continued up to 1873 when, his health failing, he bought a farm which he carried on for five years following. He was then chosen treasurer of the Nashua Savings Bank and continued as such for the next twenty years. He was elected mayor of the City of Nashua in 1865, and in 1879 was sent to represent one of the largest wards of the city in the State Legislature, serving as chairman of the committee on education of that body. In 1881 he was chosen state senator and as such was made chairman of the committee on judiciary, serving also on three other committees.

Always interested in matters pertaining to horticulture and agriculture he was an early member of the New Hampshire Agricultural Society of which he was a trustee for many years. He served also as a trustee of the New England Agricultural Society at the time the Hon. George B. Loring was its president. For the last twenty years he has owned and carried on the Riverside Farm containing 145 acres and located within a mile and a half of the City Hall in Nashua and directly opposite the U. S. Fish Hatching Station, which last named institution was formerly a part of his farm. As a student of pomology he was considered by those interested in that subject as one of the best posted in New Hampshire. His special interest for the last ten years was in strawberries and at the time of his decease he had some fifty varieties under cultivation, and some for trial that have not yet been placed on the market.

By C. W. Hoitt.

Frank W. Andrews was born in Boston, October 16, 1826, and died in Washington, May 5, 1903. He became a life member of the Society in 1858.

Mr. Andrews always made Boston his home until about fifteen years ago when he moved to Washington, making that city his winter home. For nearly forty years he had his summer residence at Newport, Rhode Island. He was a member of the Massachusetts Agricultural Club and was interested in agricultural and horticultural matters.

William Bowen Murphy was born in Cork, Ireland, May 12, 1854, and died in Boston, May 11, 1903. He became a life member of the Society in 1895. From early childhood he evinced a great love for the things of nature and, after a term of eight years in the army of the United States during which time he devoted his attention to the study of natural history, he took the complete course in botany at Harvard College. For some years thereafter he had charge of the Park Police of the City of Boston, still advancing his favorite study of plant life, and devoting every moment of his spare time thereto. While occupying this position he was awarded a medal by the Massachusetts Humane Society for saving the lives of three boys in the Back Bay Fens, May 29, 1892.

He was a frequent contributor to many of the Boston and New York newspapers, writing more frequently for the Boston Transcript. His articles written serially for the Roxbury Gazette during 1894 and 1895, as well as his articles in the Transcript on the Boston Park System and the Arnold Arboretum, received the highest encomiums. He had collected a rare assortment of pressed ferns and leaves from nearly all the public parks of Europe which attest more strongly than words his great interest in the principles and aims of the Massachusetts Horticultural Society.

By Rev. P. B. Murphy.

William Ellis Endicott was born in Canton, Massachusetts, on the old Endicott place, April 1, 1842, and died at his home there June 3, 1903. He joined the Massachusetts Horticultural Society in 1871.

Mr. Endicott was well known among his fellow-members in the Society as a botanist and horticulturist. He cultivated in his

greenhouses at Canton many rare and interesting plants. He was especially interested in bulbous and tuberous-rooted plants and he grew extensively gladioli, dahlias, tulips, etc. He was a frequent exhibitor at the Society's flower shows and many visitors were attracted to his grounds by the brilliant displays of these flowers, year after year. He became a member of the Library Committee in 1874 and was elected chairman of that committee in 1879, holding the position continuously until the summer of 1902 when, on account of failing health, he resigned.

His practical and scientific knowledge of botany and horticulture and his familiarity with foreign languages, added to his marked literary tastes, well fitted him for this position. His reports as chairman give a very full history of the conditions and growth of the library for this period of twenty-three years.

A paper of great interest to all who consult this library was presented before the Society by Mr. Endicott on March 12, 1892. It is entitled "The Library of the Massachusetts Horticultural Society" and is to be found in the TRANSACTIONS for that year.

He instituted the valuable Card Catalogue of Plates which supplements Pritzel's Iconum Botanicarum Index and spent a great deal of his leisure time at home in verifying and correcting the cards. This catalogue was begun in 1882 and now numbers many thousands of cards. The Card Catalogue of Books, suggested in his annual report for 1887, was begun in 1888.

He also supervised the expenditure of the Stickney Fund for twenty of the thirty years of its existence. The annual income from this fund was seven hundred dollars, to be used solely for the purchase of books, and Mr. Endicott continually studied the catalogues of booksellers, of this and of foreign countries, that this money might be wisely expended and that no volume needed for the library should be overlooked.

Besides his horticultural interests, Mr. Endicott was for many years head master of the Christopher Gibson School in Dorchester, beginning before Dorchester was annexed to Boston and continuing in that position until his death.

He was also a member of the Tenth Massachusetts Battery Association, having served three years in the Civil War in his

early manhood. At the battle of Ream's Station he was taken prisoner and confined for six weeks in Libby Prison.

Mr. Endicott was always fond of a quiet home life, was a great reader and student, and his evenings were almost invariably spent among his books.

By Miss C. M. Endicott.

Warren E. Eaton was born in North Reading, Massachusetts, January 7, 1839, and died in Reading, July 3, 1903. He became a member of the Society in 1893.

Mr. Eaton was for thirty-six years principal of the Harvard School, Charlestown. His recreation was in historical and horticultural work and he prepared the greater part of the memorial history of Reading published on the occasion of the 250th anniversary of the town in 1894. He was also interested in and a member of the Sons of the American Revolution.

David Boardman Flint was born in Troy, New Hampshire, May 1, 1816, and died in Boston, July 5, 1903. He became a life member of the Society in 1869.

Mr. Flint came to Boston in 1839 and a few years after engaged in the lumber business in which he was very successful.

On retiring from active business pursuits in 1869 he devoted the remainder of his life to many interests of a philanthropic and charitable nature. He was especially interested in agricultural matters in the state and was a member of the Massachusetts Agricultural Club.

Albert H. Hews was born in Weston, Massachusetts, January 13, 1844, and died there July 8, 1903. He became a life member of the Society in 1868.

Mr. Hews was well known to the floriculturists of the country through his connection with the manufacture of pottery at Cambridge. The Hews Pottery was established in the town of Weston some time prior to 1765 and ever since has been carried on by some member of the family, Albert H. Hews being the fourth generation from the founder of the pottery.

Mr. Hews was much interested in horticulture and his love of nature was strong, qualities which served as an incentive in his

efforts to produce in his business the very best that could be made for the special requirements of all kinds of plants. His home in Weston was a spot where floriculturists loved to linger.

Charles Jackson Dawson was born in Jamaica Plain, Massachusetts, October 17, 1871, and died there September 15, 1903. He became a member of the Society in 1896.

Mr. Dawson was born and educated in an environment of plants and plant culture and continued through life closely connected with such work.

After leaving school he took a course of instruction at the Bussey Institution of Harvard University and was for some years connected with the Boston Park Department.

He was for several years secretary of the Gardeners' and Florists' Club of Boston. He had recently entered into the nursery business on his own account and his early death brings to a close a life of much promise.

Mrs. Celenda Smith Hatch was born in Whitefield, Maine, July 21, 1833, and died in Cambridge, Massachusetts, September 25, 1903. She became a life member of the Society in 1895.

Mrs. Hatch was a lover of the beautiful in the floral kingdom and took great delight in the exhibitions of the Society.

Charles E. Grant was born in Boston, August 26, 1814, and died in Lynn, October 1, 1903. He became a member of the Society in 1847, during the presidency of Samuel Walker, and was one of the very few living members of that period.

Mr. Grant was engaged in the paper hanging business on Union Street, Boston, for thirty years and on retiring served on the board of assessors for eight or nine years.

He lived for the greater part of his life in Roxbury, serving for two years as alderman before its annexation to Boston. He was also a representative to the Legislature in 1853. He was a skilful cultivator of grapes, peaches, plums, and small fruits and made many contributions of his products to the exhibitions of the Society taking many prizes therefor. Between the years 1846 and 1894, forty-eight years, he rarely failed to be represented at

the exhibitions, a record of continuous interest probably unequaled in the history of the Society.

Mrs. Henrietta Louisa Tracy Wolcott was born in Boston, September 25, 1825, and died in Brookline, October 8, 1903.

She became a member of the Society in 1876 and at once entered into its work with an activity and enthusiasm that ceased only with her death.

Many other educational and philanthropical interests were also the objects of her untiring devotion, large sympathies, and helpful services and have been spoken as a memorial of her elsewhere and need not be repeated here.

In the year 1878 Mrs. Wolcott with a few other interested persons started a movement in the Society for the purpose of encouraging a practical taste for floriculture among the children of the city. The object in view was "to promote a love for flowers and their culture among those who have little or no opportunity to grow them except in windows".

The Window Gardening Committee of which she was chairman during the whole period of its existence continued its work until 1894 when its title was changed to the Committee on School Gardens and Children's Herbariums and a broader field of work was outlined in which she ever retained an active and helpful interest, continuing a member of the committee until her death.

She was earnest in the advocacy of nature studies in the public schools and lived to note with great satisfaction the wide-spread interest in the school garden movement in which she was one of the pioneers in this country.

To those privileged to have known Mrs. Wolcott personally, to have enjoyed her entertaining and instructive conversation, and to have felt the inspiration of her cheerful presence, her death comes as a real bereavement, brightened however, by many pleasing reminiscences.

Hon. John Edwards Russell was born in Greenfield, Massachusetts, January 20, 1834, and died in Leicester, October 28, 1903. He became a life member of the Society in 1881.

Mr. Russell was for many years a conspicuous personage in the business, political, and social life of his state and nation and a man of many and broad interests.

It is only, however, to the agricultural and horticultural side of his career that attention can be given in this memorial notice. His interest in these lines led him to accept the secretaryship of the Massachusetts State Board of Agriculture, a position to which he devoted much active and fruitful service in the years 1881 to 1887, filling the office to the great satisfaction of the farmers of the state. He was also a trustee of the State Agricultural College.

Himself practically interested in farming he took much pleasurable pride in his Leicester estate and in his horses, cattle, and sheep.

He was a man of lovable character as well as of business and political ability and one that adorned and elevated any undertaking into which he entered and he leaves a record of fruitful service in his day and generation.

William Henry White was born in Woburn, Massachusetts, October 26, 1829, and died in Pittsfield, New Hampshire, November 12, 1903. He became a member of the Society in 1890.

Mr. White was the senior member of the firm of White Brothers & Company, manufacturers of leather and had extensive factories in Lowell, Massachusetts, where he had resided since 1863. After having devoted the larger part of his life to business pursuits he retired in 1900 and engaged in fruit culture on an extensive scale in Pittsfield where he owned a farm of about one hundred acres. Here he set out 12,000 young trees, including the best known varieties of apples, as well as of plum and cherry trees. He had always a great interest in horticultural pursuits and was convinced that by the use of up-to-date methods it was possible to demonstrate that the farm lands of New Hampshire which were bringing in little or no revenue would be capable of returning a handsome profit on the investment.

He did not live to realize his expectations, as it will require five or six years to bring the trees to a growth sufficient to produce marketable quantities, but the enterprise will probably be continued by his sons.

By H. Kirke White.

George Orlando Smith was born in Lexington, Massachusetts, January 5, 1832, and died at his temporary home in Somerville, November 16, 1903. He became a member of the Society in 1865.

Mr. Smith belonged to one of Lexington's old families and was one of the leading citizens of that historic town. He was greatly interested in and thoroughly informed as to its history and was one of the founders and a president of the Lexington Historical Society and also had been a selectman of the town.

He was much devoted to floriculture and had a fine garden at his Lexington home. He was especially interested in roses and at various times exhibited the products of his garden at the shows of the Society.

Charles W. Galloupe was born in Beverly, Massachusetts, September 5, 1825, and died in Boston, November 28, 1903. He became a life member of the Society in 1889.

Mr. Galloupe was actively engaged in business pursuits in Boston for many years.

He had a summer home in Swampscott with spacious grounds beautifully adorned with shrubbery and trees and, having a taste for horticulture, he took much pleasure in his greenhouses and gardens. In past years he frequently exhibited specimens of his cultivation at the Society's exhibitions.

Augustus Flagg was born in Worcester, Massachusetts, January 17, 1818, and died in Boston, November 29, 1903. He become a life member of the Society in 1865.

Mr. Flagg was connected for nearly fifty years with the firm of Little, Brown & Company of Boston, publishers and booksellers. He owned a farm in Waltham and was much interested in horticultural and agricultural affairs.

Philip Augustus Chase was born in Lynn, Massachusetts, November 14, 1834, and died in the same city, December 16, 1903. He became a member of the Society in 1894.

Mr. Chase was prominent in business and financial circles in Boston and Lynn, having been engaged in the leather business

and in shoe manufacturing in both cities. He was also active in public life and was especially interested in the subject of city parks and public reservations. He was a member of the Metropolitan Park Commission for several years, and was one of the trustees of Public Reservations, and chairman of the Lynn Park Commission. It was largely through his influence that the Lynn Woods and Revere Beach were secured for public pleasure grounds.

Ernst George Asmus was born in Hamburg, Germany, November 27, 1844, and died in West Hoboken, New Jersey, December 17, 1903. He became a life member of this Society in 1898.

From an humble beginning, with small capital, Mr. Asmus developed a large business in the growing of cut flowers, especially roses, carnations, and lilies of the valley. He achieved great success as a cultivator of roses, introducing to the trade the well-known varieties, Liberty, Souvenir du President Carnot, and Mme. Caroline Testout.

John R. Poor was born in Danvers, Massachusetts, in the year 1818, and died in Boston, December 18, 1903. He was a life member of this Society since 1859.

Mr. Poor was a prominent merchant of Boston, a member of the well-known firm of Stickney & Poor, dealers in spices.

He resided in the neighboring city of Somerville for many years, where he had a fine estate from which he often brought specimens of fruit to the exhibitions of the Society.

Moody Merrill was born in Campton, New Hampshire, June 27, 1836, and died in Silver City, New Mexico, December 24, 1903. He became a life member of the Society in 1889.

Mr. Merrill was largely interested in financial and real estate matters in Boston for the period between 1875 and 1885, especially in the development of what at the time were considered suburban properties. He established the once popular outdoor resort in Roxbury known as the Oakland Garden, but this as well as most of his other enterprises proved financially disastrous.

Isaac Gilbert Robbins was born in Lynn, Massachusetts, November 26, 1835, and died in Cambridge, December 24, 1903. He became a life member of the Society in 1873.

William Durant was born in Boston, July 26, 1816, and died in the same city, December 31, 1903. He became a life member of the Society in 1864 and remained throughout the remainder of his life its constant friend and helper. Through the columns of the Boston Transcript, of which he was the business manager for sixty years, he rendered efficient and welcome service, always giving liberal space to the descriptions of the Society's exhibitions and to the reports of its business and educational meetings.

TREASURER'S REPORT

FOR THE YEAR 1903.

MASSACHUSETTS HORTICULTURAL SOCIETY, *in account current with* CHARLES E. RICHARDSON, *December 31st, 1903.*

DR.

To amount paid for Furniture and Exhibition Ware			$476 65
" " " " Library, appropriated by Society	$225 00		
" " " from income of J. S. Farlow Fund	86 15		
" " " " income of J. D. Williams French Fund	136 42		
			447 57
" " " Interest on funds for prizes and other funds, credited opposite			2,074 72
" " " for Heating	1,876 89		
" " " " Lighting	756 28		
" " " " Water Rates	65 80		
" " " " Labor	1,778 88		
" " " " Stationery, Printing and Postage	2,626 05		
" " " " Insurance	370 68		
" " " " Incidentals	691 06		
" " " " Repairs	246 34		
" " " " Committee of Arrangements	225 00		
" " " " " on School Gardens and Children's Herbariums	18 80		
" " " " Committee on Lectures and Publications	200 00		
" " " " Committee on Forestry and Roadside Improvements	100 13		
Amounts carried forward		$8,955 91	$2,998 94

Amounts brought forward	$8,955 91	$2,998 94
To amount paid for Salaries of Treasurer, Secretary and Assistants .	4,000 00	
" " " " Salaries of Committees .	895 00	
" " " " Tax on Real Estate in South Boston	139 12	
" " " " Electric Power . . .	175 10	
" " " " Legal Services . . .	50 00	
" " " to Aaron Low	100 00	
" " " for Decorations for American Pomological Society's Convention . . .	100 00	
	———	14,415 13
" " " " *Prizes awarded in 1902*, viz.:		
Prizes for Plants	1,959 35	
" " Flowers	1,832 42	
" " Fruit	1,525 60	
" " Vegetables	1,171 35	
" " Gardens and Greenhouses	330 67	
" " Native Plants	93 52	
" " School Gardens and Children's Herbariums . . .	55 41	
H. H. Hunnewell, Triennial Prize . .	160 00	
" ". Prizes for Rhododendrons	105 00	
Edward Hatch, special prize . . .	50 00	
	———	7,283 32
		$24,697 39
Balance of Cash December 31, 1903 . .		15,531 02
		$40,228 41

Cr.

By Balance of account rendered December 31, 1902 . .		$17,648 55
Received from Building 1903, use of Halls,	$2,238 00	
" " Annual Exhibitions $2,057 50		
Less Expenses, 1,562 56		
	494 94	
" " Admissions and Assessments	1,038 00	
" " Mount Auburn Cemetery .	5,011 70	
" " State Bounty . . .	600 00	
	———	———
Amounts carried forward	9,382 64	17,648 55

Amounts brought forward		$9,382 64	$17,648 55
Received from Sales of Transactions . .		34 25	
" " Interest on Bonds,	$9,700 00		
" " " " Stock,	1,112 00		
" " " " Deposit in Bank . .	226 25		
		11,038 25	
" " Miss Sarah B. Fay, for Special Prize		50 00	
" Interest *credited following 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		
		2,074 72	
			22,579 86
			$40,228 41

CHARLES E. RICHARDSON,
Treasurer.

Approved:

WALTER HUNNEWELL, HENRY P. WALCOTT, *Finance Committee.*

ASSETS, DECEMBER 31st, 1903.

Real Estate		$516,172 36
Furniture and Exhibition Ware		8,727 19
Library		41,749 19
Stereotype Plates and Copies of History		246 50
Chicago, Burlington & Quincy R. R. Bonds	$1,000 00	
Kansas City, Clinton & Springfield R. R. Bonds	1,980 00	
Lake Shore & Michigan Southern R. R. Bonds	10,415 25	
City of Newton Bonds	24,228 75	
Atchison, Topeka & Santa Fe R. R. Bonds	44,693 25	
Chicago, Burlington & Quincy, "Nebraska Extension," R. R. Bonds	50,012 50	
Chicago & West Michigan R. R. Bonds	9,987 50	
Kansas City, Fort Scott & Memphis Consols	27,523 75	
Chicago, Burlington & Quincy, "Illinois Division," R. R. Bonds	51,625 00	
Boston & Maine, R. R. Bonds	8,710 00	
West End Street Railway Bonds	5,162 50	
General Electric Co. Stock	10,082 00	
		245,420 50
W. A. Hayes and A. P. Loring, Trustees		3,488 76
Cash		15,531 02
		$831,335 52

LIABILITIES.

Prize and other Funds invested in bonds and stock:

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 Whitcomb	"	500 00
Benjamin B. Davis	"	500 00
Marshall P. Wilder	"	1,000 00
John Lewis Russell	"	1,000 00
Amount carried forward		23,854 43

Amount brought forward	$23,854 43		
Francis Brown Hayes "	10,000 00		
Henry A. Gane "	1,000 00		
John S. Farlow "	2,515 77		
J. D. Williams French "	5,063 87		
Benjamin H. Pierce "	800 00		
		$43,234 07	
Prizes awarded in 1903, payable in 1904		6,250 00	
Miss Sarah B. Fay, Special Prize		50 00	
Kenneth Finlayson		60 00	
			$ 49,594 07
Surplus			781,741 45
			$831,335 52

Membership of the Massachusetts Horticultural Society, December 31st, 1903.

Life Membership per last report	694		
Added in 1903	18		
Reinstated	2		
Commuted from Annual	1		
		715	
Deceased		29	
			686
Annual Membership per last report	189		
Added in 1903	14		
		203	
Commuted to Life	1		
Deceased	10		
Resigned	5		
Dropped for non-payment of assessments for two years	5		
		21	
			182
Present Membership			868

INCOME FROM MEMBERSHIP.

18 New Life Members @ $30	$540 00
1 Reinstated	20 00
1 Commuted to Life @ $20	20 00
14 New Annuals @ $10	140 00
Assessments	318 00
	$1,038 00

CHAS. E. RICHARDSON,
Treasurer.

AUDITOR'S CERTIFICATE.

28 State Street, Boston, February, 1st, 1904.

To the Finance Committee of the
Massachusetts Horticultural Society,

Gentlemen:— Having completed my audit of the books and general accounting affairs of the *Massachusetts Horticultural Society* for the year which ended with the 31st day of December, 1903, I herewith hand you my report of the same.

Report.

I added 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 found adequate the vouchers representing the disbursements during the year, and found the amount of cash required by the cash book upon the first day of January, 1904, to have been on hand. I also inspected the securities of the Society in the custody of the Treasurer and they were in all instances in accordance with the requirements of the records. I traced all postings from the journal and cash book into the ledger and proved the correctness of the balance sheet taken from the ledger as of the 31st day of December, 1903, which is a true statement of the financial condition of the Society upon said date, 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 there was every evidence of fidelity upon the part of the Treasurer.

Very respectfully yours,

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, 1903.

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1903, the Massachusetts Horticultural Society being charged with their proportion of same:			
Rear of Walnut Avenue and Violet and Fern Paths.			
55.5 days, man	$124 88		
16.7 days, horse	62 63		
$\frac{3}{16}$ day, man and horse	1 57		
		$189 08	
Between Cherry and Magnolia Avenues.			
20.7 days, man	$ 46 58		
77.2 days, man and horse	289 50		
		$336 08	
Glen Avenue.			
16.4 days, man and horse		61 50	
		$586 66	
One-fourth of $586.66 is			$ 146 67
Balance due Mass. Horticultural Society			5,011 70
			$5,158 37

By Sales in January		$1,153 75	
" " " February		86 00	
" " " March		986 00	
" " " April		6,171 00	
" " " May		3,434 00	
" " " June		850 00	
" " " July		1,389 00	
" " " August		237 50	
" " " September		2,115 00	
" " " October		533 75	
" " " November		2,616 50	
" " " December		1,410 00	
		$20,976 50	
Net amount received from Receiving Tomb		1,259 00	
		$22,235 50	
Less graves repurchased	$ 40 00		
" lot "	162 00		
		202 00	
		$22,033 50	
Deduct for Annual Expenses		1.400 00	
		$20,633 50	
One-fourth of $20,633.50 is			$5.158 37

E. and O. E

BOSTON, December 31st, 1903.

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 31st, 1903, the Massachusetts Horticultural Society being charged with their proportion of same.

Rear of Walnut Avenue and Violet and Fern Paths.

55.5 days, man	$124 88	
16.7 days, horse	62 63	
$\frac{3}{10}$ day, man and two horses	1 57	
	———	$189 08

Between Cherry and Magnolia Avenues.

20.7 days, man	$46 58	
77.2 days, man and horse	289 50	
	———	336 08

Glen Avenue.

16.4 days, man and horse		61 50
		———
		$586 66
One-fourth of $586.66 is		$146 67

JAMES C. SCORGIE,
Supt. of Cemetery of Mt. Auburn.

BOSTON, December 31st, 1903.

I certify the foregoing to be a true copy of improvements for the year 1903 as rendered by the Superintendent.

JOHN L. DILL,
Treasurer.

Massachusetts Horticultural Society.

OFFICERS AND STANDING COMMITTEES FOR 1904.

President.

HENRY P. WALCOTT, M. D., OF CAMBRIDGE.

Vice-President. (for 2 years)

WALTER HUNNEWELL, OF BOSTON.

Vice-President. (for 1 year)

WARREN W. RAWSON, OF ARLINGTON.

Treasurer.

CHARLES E. RICHARDSON, OF BROOKLINE.

Secretary.

WILLIAM P. RICH, OF CHELSEA.*

Trustees. (for 3 years)

WILLIAM N. CRAIG, OF NORTH EASTON.

JOHN K. M. L. FARQUHAR, OF BOSTON.

CHARLES S. SARGENT, OF BROOKLINE.

Trustees. (for 2 years)

OAKES AMES, OF BOSTON.

ARTHUR H. FEWKES, OF NEWTON HIGHLANDS.

CHARLES W. PARKER, OF BOSTON.

WILLIAM H. SPOONER, OF JAMAICA PLAIN.

Trustees. (for 1 year)

ARTHUR F. ESTABROOK, OF BOSTON.

ROBERT T. JACKSON, OF CAMBRIDGE.

JOHN A. PETTIGREW, OF BOSTON.

MICHAEL SULLIVAN, OF REVERE.

ARTHUR D. HILL, OF BOSTON.

Nominating Committee.

WALTER C. BAYLIES, OF BOSTON.

WILLIAM H. ELLIOTT, OF BRIGHTON,

NATHANIEL T. KIDDER, OF MILTON.

RICHARD M. SALTONSTALL, OF BOSTON.

C. MINOT WELD, OF BOSTON.

*Communications to the Secretary, on the business of the Society, should be addressed to him at Horticultural Hall, Boston.

COMMITTEES FOR 1904.

Finance Committee.

WALTER HUNNEWELL, *Chairman.*
ARTHUR F. ESTABROOK, HENRY P. WALCOTT, M. D.

Committee on Prizes and Exhibitions.

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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 list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Joseph Maxwell, *elected in* 1830, *and* George W. Smith, *elected in* 1851.

Hon. George S. Boutwell, Groton.

Clarence H. Clark, Ex-President of the Pennsylvania Horticultural Society, Philadelphia.

Joseph Jefferson, Buzzard's Bay.

Major L. A. Huguet-Latour, M. P., Montreal, Canada.

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.

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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 list is inaccurate in any particular, will confer a favor by promptly reporting to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Alexander Burton, *elected in* 1829; S. Reynolds, M.D., 1832; and Francis Summerest (or Summerer), 1833.

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 de 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.

Professor J. L. Budd, Ames, Iowa.

F. W. Burbidge, M.A., Trinity College Botanic Garden, Dublin, Ireland.

Alexander Burton, United States Consul at Cadiz, Spain, Philadelphia.

Rev. H. Honywood D'Ombrain, Westwell Vicarage, Ashford, Kent, England.

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.

B. E. FERNOW, Forestry School, Cornell University, Ithaca, N. Y.

HON. ROBERT W. FURNAS, Ex-President of the Nebraska State Horticultural Society, Brownville.

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.

HENRY H. GOODELL, President of the Massachusetts Agricultural College, Amherst.

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.

THE VERY REV. S. REYNOLDS HOLE, D.D., Dean of Rochester, Rochester, England.

SIR JOSEPH HOOKER, K.C.S.I., The Camp, Sunningdale, England.

JOSIAH HOOPES, West Chester, Pa.

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 Nøvik, Secretary of the Norwegian Horticultural Society, Christiana.

William Paul, Waltham Cross, London, N.

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.

William R. Smith, Superintendent of the Botanic Garden, Washington, D. C.

Robert W. Starr, Port William, N. S.

Francis Summarest,

William Trelease, Director of the Missouri Botanic Garden, St. Louis.

Dr. Melchior Treub, Director of the Botanic Garden, Buitenzorg, Java.

H. J. Veitch, Chelsea, England.

William Watson, Curator of Royal Gardens, Kew, England.

Professor L. Wittmack, Secretary of the Royal Prussian Horticultural Society, Berlin, Prussia.

MEMBERS FOR LIFE.

Members of the Society and all other persons who may know of deaths, changes in residence, or other circumstances showing that the following list is incorrect in any particular, will confer a favor by promptly communicating to the Secretary any needed corrections.

Information, or any clew to it, is especially desired in regard to members whose names are marked thus †.

Adams, Mrs. Charles Francis. South Lincoln.
Adams, Henry Saxton, Dorchester.
Alger, Rev. R. F., Dorchester.
Allen, Hon. Charles H., Lowell.
Allen, Thomas, Boston.
Ames, F. Lothrop, North Easton.
Ames, John S., North Easton.
Ames, Miss Mary S., North Easton.
Ames, Oakes, North Easton.
Ames, Oliver, North Easton.
Ames, Mrs. Oliver, Sr., North Easton.
Ames, Preston Adams, Washington, D. C.
Ames, Miss Susan E., North Easton.
Amory, C. W., Boston.
Amory, Frederick, Boston.
Anderson, Larz, Brookline.
Andrews, Charles L., Milton.
Andros, Milton, San Francisco, Cal.
Appleton, Francis H., Boston.
Arnold, Mrs. George Francis, Brookline.
Ash, John, Pomfret Centre, Conn.
Atkins, Edwin F., Belmont.
Ayer, James B., Boston.
Bailey, Jason S., West Roxbury.
Bailey, Robert M., Dedham.
Baker, Clifton P., Dedham.
Baker, James E., South Lincoln.
Ball, George H., Boston.
Banfield, Francis L., M. D., Worcester.
Barber, J. Wesley, Newton.
Barnard, James M., Boston.
Barnard, Robert M., Everett.
Barnes, Walter S., Boston.
†Barney, Levi C., Boston.
Barry, John Marshall, Boston.
Barry, William C., Rochester, N. Y.
Bartlett, Francis, Beverly.
Bartlett, Miss Mary F., Boston.
Bates, Miss Mary D., Ipswich.
Baylies, Walter C., Taunton.
Beal, Leander, Swampscott.
Becker, Frederick C., Cambridge.
Beckford, Daniel R., Jr., Dedham.
Beebe, E., Pierson, Boston.
Beebe, Franklin H., Boston.
Beebe, J. Arthur, Boston.
Bigelow, Albert S., Cohasset.

Bigelow, Joseph S., Cohasset.
Bigelow, Dr. William Sturgis, Boston.
Black, George N., Manchester.
Blake, Miss Anne, Brookline.
Blake, Mrs. Arthur W., Brookline.
Blake, Edward D., Boston.
Blake, Francis, Weston.
Blake, Frederick A., Rochdale.
Blanchard, John W., West Newton.
Bliss, William, Boston.
Boardman, Samuel M., Hyde Park.
Boardman, T. Dennie, Manchester.
Bolles, William P., M. D., Roxbury.
Bosler, Frank C., Carlisle, Penn.
Bowditch, Charles P., Jamaica Plain.
Bowditch, Ernest W., Milton.
Bowditch, James H., Brookline.
Bowditch, Nathaniel I., Framingham.
Bowditch, William E., Roxbury.
Bowker, William H., Boston.
Brackett, Cephas H., Brighton.
Breck, Joseph Francis, Allston.
Bremer, Mrs. John L., Manchester.
Bresee, Albert, Hubbardton, Vt.
Brewer, Francis W., Hingham.
Briggs, William S., Lincoln.
Brigham, William T., Honolulu, Hawaii.
Brooks, Henry, Lincoln.
Brooks, J. Henry, Boston.
Brooks, Lawrence, Groton.
Brooks, Peter C., Boston.
Brooks, Shepherd, Boston.
Brown, Alfred S., Jamaica Plain.
Brown, Edward J., Weston.
Brown, George Barnard, Brookline.
Brown, John M., Belmont.
Brown, Samuel N., Boston.
Burlen, William H., Boston.
Burnett, Harry, Southborough.
Burnham, John A., Wenham.
Buswell, Frank E., Brooklyn, N. Y.
Butler, Aaron, Wakefield.
Butler, Edward K., Jamaica Plain.

Cabot, Dr. Arthur T., Boston.
Cabot, George E., Boston.
Cains, William, South Boston.
Calder, Augustus P., Dorchester.
Cameron, Robert, Cambridge.
Campbell, Francis, Cambridge.
Capen, John, Boston.
Carlton, Samuel A., Boston.
Carr, Hon. John, Roxbury.
Carter, Charles N., Needham.
Carter, Miss Maria E., Woburn.
Cartwright, George, Dedham.
Casas, W. B. de las, Malden.
Chadbourne, Marshall W., East Watertown.
Chaffin, John C., Newton.
Chamberlain, Chauncy W., Boston.
Chapman, John L., Hingham.
Chase, Daniel E., Somerville.
Cheney, Mrs. Elizabeth S., Wellesley.
Choate, Charles F., Southborough.
Christie, William, Everett.
Claflin, Hon. William, Newtonville.
Clapp, Edward B., South Boston.
Clapp, James H., South Boston.
Clapp, William C., South Boston.
Clark, Benjamin C., Boston.

Clark, B. Preston, Cohasset.
Clark, Miss Eleanor J., Pomfret Centre, Conn.
Clark, J. Warren, Millis.
Clarke, Miss Cora H., Boston.
Clarke, Eliot C., Boston.
Clough, Micajah Pratt, Lynn.
Cobb, John C., Milton.
Coburn, Isaac E., Everett.
Codman, James M., Brookline.
Codman, Ogden, South Lincoln.
Coe, Miss Mary Alma, Boston.
Coffin, Abraham B., Winchester.
Cogswell, Edward R., Jr., Cambridge.
Cole, Edward E., Boston.
Collamore, Miss Helen, Boston.
Colton, Samuel H., Worcester.
Comley, Norris F., Lexington.
Converse, Elisha S., Malden.
Converse, Col. H. E., Malden.
Coolidge, Harold J., Boston.
Coolidge, Joshua, Mount Auburn.
Coolidge, J. Randolph, Chestnut Hill.
Coolidge, Mrs. J. Randolph, Chestnut Hill.
Coolidge, T. Jefferson, Jr., Boston.
Cottle, Henry C., Boston.
Cox, Thomas A., Dorchester.
Coy, Samuel I., Boston.
Craig, William Nicol, North Easton.
Crane, Zenas, Dalton.
Crawford, Dr. Sarah M., Roxbury.
Crocker, Hon. George G., Boston.
Crocker, Miss S. H., Boston.
Crosby, George E., West Medford.
Cross, Alfred Richard, Nantasket.
Crowell, Randall H., Watertown.
Curtis, Charles F., Jamaica Plain.
Curtis, Charles P., Swampscott.
Curtis, Charles P., Jr., Boston.
Cushing, Livingston, Weston.
Cushing, Robert M., Boston.
Cutler, Judge Samuel R., Revere.
Cutting, Gen. Walter, Pittsfield.

†Daggett, Henry C., Boston.
Dalton, Charles H., Beverly.
Daly, John C., Roxbury.
Damon, Frederick W., Arlington.
Dana, Charles B., Wellesley.
Daniels, Dr. Edwin A., Boston.
Davenport, Albert M., Watertown.
Davenport, George E., Medford.
Davis, Arthur E., Wellesley.
Davis, Mrs. Arthur E., Wellesley.
Davis, Edward L., Worcester.
Davis, L. Shannon, Brookline.
Dawson, Jackson T., Jamaica Plain.
Dee, Thomas W., Cambridge.
Denny, Clarence H., Boston.
Denton, Eben, Dorchester.
Dexter, George, Beverly.
Dike, Charles C., Stoneham.
Doane, Edgar Howard, Wenham.
Doliber, Thomas, Brookline.
Donald, William, Cold Spring Harbor, N. Y.
Donaldson, James, Roxbury.
Dorr, George, Dorchester.
Dove, George W. W., Andover.
Dowse, William B. H., West Newton.
Draper, Hon. Eben S., Hopedale.
Draper, George A., Hopedale.
Dreer, William F., Philadelphia, Pa.
Dumaresq, Herbert, Chestnut Hill.
Duncan, James L., New York, N. Y.

Dunlap, James H., Nashua N. H.
Durfee, George B., Fall River.
Dutcher, Frank J., Hopedale.
Dwight, Theodore F., Kendal Green.
Dyer, Herbert H., Cambridge.

Eaton, Horace, Cambridge.
Edgar, William W., Waverley.
Eldredge, H. Fisher, Boston.
Elliot, Mrs. John W., Boston.
Elliott, William H., Brighton.
Ellsworth, J. Lewis, Worcester.
Endicott, William, Boston.
Endicott, William, Jr., Boston.
Endicott, William C., Jr., Danvers.
Estabrook, Arthur F., Boston.
Ewell, Warren, Dorchester.
Fabyan, George F., Brookline.
Fairchild, Charles, New York, N. Y.
Falconer, William, Pittsburg, Pa.
Farlow, Lewis H., Cambridge.
Farnsworth, Mrs. William, Dedham.
Farquhar, James F. M., Roslindale.
Farquhar, John K. M. L., Roxbury.
Farquhar, Robert, North Cambridge.
Faxon, John, Quincy.
Fay, H. H., Woods Hole.
Fay, Joseph S., Jr., Woods Hole.
Fenno, L. Carteret, Boston.
Fessenden, George B., Allston.
Fewkes, Arthur H., Newton Highlands.
Finlayson, Kenneth, Brookline.
Fisher, Peter, Ellis.
Fletcher, George V., Belmont.
Fletcher, J. Henry, Belmont.
Fletcher, John W., Chelsea.
Foster, Charles H. W., Brookline.
Foster, Francis C., Cambridge.
Fottler, John, Jr., Dorchester.
Fowle, George W., Jamaica Plain.
French, Miss Caroline L. W., Boston.
French, S. Waldo, Jamaica Plain.
French, W. Clifford, Newton.
Frohock, Roscoe R., Malden.
Frost, Harold L., Arlington.
Frost, Irving B., Belmont.
Frost, Varnum, Arlington.

Gardner, Mrs. Augustus P., Hamilton.
Gardner, George A., Boston.
Gardner, George P., Boston.
Gardner, John L., Boston.
Gardner, Mrs. John L., Brookline.
Gardner, William Amory, Groton.
Gaston, William A., Boston.
Gibbs, Wolcott, M. D., Newport, R. I.
Gill, George B., Medford.
Gillard, William, Dorchester.
Gilmore, E. W., North Easton.
Gilson, F. Howard, Wellesley Hills.
Goddard, Joseph, Sharon.
Goodell, L. W., Dwight.
Gowing, Mrs. Clara E., Kendal Green.
Gray, James, Wellesley.
Gray, Mrs. John C., Boston.
Gregory, Hon. James J. H., Marblehead.
Grew, Edward S., Boston.

Hadwen, Obadiah B., Worcester.
Hale, James O., Byfield.
Hall, Edwin A., Cambridgeport.

Hall, George A., Chelsea.
Hall, Jackson E., Cambridge.
Hall, Osborn B., Malden.
Hall, William F., Brookline.
Halliday, William H., South Boston.
Hammond, George W., Boston.
†Harding, George W., Arlington.
Harding, Louis B., Chestnut Hill.
Hardy, F. D., Cambridgeport.
Hargraves, William J., Jamaica Plain.
Harlow, James F., Quincy.
Harris, Charles, Cambridge.
Harris, Thaddeus William, A. M., Keene, N. H.
Hartshorn, Arthur E., Worcester.
Harwood, George Fred, Newton.
Haskell, Edwin B., Auburndale.
Hastings, Levi W., Brookline.
Hatch, Edward, Boston.
Haven, Franklin, Boston.
Hawken, Mrs. Thomas, Rockland, Me.
Hayward, George P., Chestnut Hill.
†Hazeltine, Hazen, Boston.
Hellier, Charles E., Boston.
Hemenway, Augustus, Canton.
Hemenway, Mrs. Augustus, Canton.
Henshaw, Joseph P. B., Boston.
Henshaw, Samuel, Cambridge.
Heurlin, Julius, South Braintree.
Hewett, Miss Mary C., Canton.
Higginson, Francis L., Boston.
Higginson, Mrs. Henry L., Boston.
Hilbourn, A. J., Boston.
Hill, John, Stoneham.
Hittinger, Jacob, Mt. Auburn.
Hoar, Samuel, Concord.
Hodgkins, John E., Portsmouth, N. H.
Hoitt, Hon. Charles W., Nashua, N. H.
Hollingsworth, Amor L., Milton.
Hollingsworth, Z. T., Boston.
Hollis, George W., Allston.
Holmes, Edward J., Boston.
Holt, Gustavus C., Belmont.
Holt, Mrs. Stephen A., Cambridge.
Holt, William W., Winchester.
Hooper, Mrs. Robert C., Boston.
Hooper, William, Boston.
Horner, Mrs. Charlotte N. S., Georgetown.
Horsford, Miss Kate, Cambridge.
Hosmer, Oscar, Wenham.
Hovey, Charles H., South Pasadena, Cal.
Hovey, Stillman S., Woburn.
Howard, Joseph W., Somerville.
Hubbard, Charles Wells, Weston.
Hubbard, James C., Everett.
Humphrey, George W., Dedham.
Hunnewell, Arthur, Wellesley.
Hunnewell, Henry Sargent, Wellesley.
Hunnewell, Walter, Wellesley.
Hunt, Dudley F., Reading.
Hunt, Francis W., Melrose.
Hunt, Franklin, Charlestown, N. H.
Hunt, William H., Concord.

Jack, John George, Jamaica Plain.
Jackson, Charles L., Cambridge.
Jackson, Robert T., Cambridge.
James, Ellerton, Nahant.
James, Mrs. Ellerton, Nahant.
James, George Abbot, Nahant.
Janvrin, William S., Revere.
Jeffries, William A., Boston.
Jenks, Charles W., Bedford.
Johanssohn, Emil, Brookline.
Johnson, J. Frank, Malden.

Jones, Jerome, Brookline.
Jones, Dr. Mary E., Boston.
Jordan, Eben D., Boston.
Jordan, Henry G., Brookline.
Jose, Edwin H., Cambridgeport.

Kakas, Edward, West Medford.
Kellen, William V., Marion.
Kelley, George B., Jamaica Plain.
Kendall, D. S., Woodstock, Ont.
Kendall, Edward, Cambridgeport.
†Kendall, Joseph R., San Francisco, Cal.
Kendall, Dr. Walter G., Atlantic.
Kendrick, Mrs. H. P., Boston.
Kennedy, George G., M. D., Roxbury.
Kent, John, Chestnut Hill.
Keyes, John M., Concord.
Kidder, Charles A., Southborough.
Kidder, Nathaniel T., Milton.
Kimball, David P., Boston.
King, D. Webster, Boston.
Kingman, Abner A., Brookline.
Kingman, C. D., Middleborough.
Kinney, H. R., Worcester.
Knapp, Walter H., Newtonville.

Lamb, Horatio A., Milton.
Lancaster, Charles B., Boston.
Lanier, Charles, Lenox.
Lawrence, Amory A., Boston.
Lawrence, Amos A., Boston.
Lawrence, James, Groton.
Lawrence, John, Groton.
Lawrence, Rt. Rev. William, Boston.
Learned, Charles A., Arlington.
Lee, Daniel D., Jamaica Plain.
Lee, Francis H., Salem.
Lee, George C., Newton.
Leeson, Hon. Joseph R., Newton Centre.
Leighton, George B., Monadnock, N. H.
Lemme, Frederick, Charlestown.
Leuchars, Robert B., Dorchester.
Libby, Charles W., Medford.
Lincoln, George, Hingham.
Lincoln, Col. Solomon, Boston.
Little, James L., Brookline.
Little, John Mason, Swampscott.
Locke, Edwin F., West Medford.
Locke, Isaac H., Belmont.
Lockwood, Rhodes, Boston.
Lodge, Richard W., Boston.
Loftus, John P., Dorchester.
Loomis, Elihu G., Bedford.
Loring, Augustus P., Beverly.
Loring, Mrs. William Caleb, Beverly.
Lathrop, William S. H., Boston.
Low, George D., Boston.
†Lowder, John, Watertown.
Lowell, Abbott Lawrence, Boston.
Lowell, Miss Amy, Brookline.
Lowell, James A., Chestnut Hill.
Lowell, John, Newton.
Luke, Otis H., Brookline.
Lumb, William, Boston.
Lunt, William W., Hingham.
Lyman, George H., Wareham.
Lyman, Mrs. Theodore, Brookline.

Mabbett, George, Plymouth.
McCarty, Timothy, Providence, R. I.
Mackie, George, M. D., Attleboro.
McWilliam, George, Whitinsville.
†Mahoney, John, Boston.
Mallett, E. B., Jr., Freeport, Me.
Mann, James F., Ipswich.
Manning, Jacob W., Reading.
Manning, J. Woodward, Reading.

Manning, Mrs. Lydia B., Reading.
Manning, Warren H., Brookline.
Marble, Benjamin C., Manchester.
Marshall, Frederick F., Everett.
Marston, Howard, Boston.
Mason, Miss Ellen F., Boston.
Mason, Col. Frederick, Taunton.
Mathison, Fred R., Waltham.
Matthews, Nathan, Boston.
Matthews, Nathan, Jr., Boston.
May, Frederick W. G., Boston.
Melvin, George, South Framingham.
Melvin, James C., West Newton.
Merriam, Charles, Boston.
Merriam, Herbert, Weston.
Metivier, James, Cambridge.
Milmore, Mrs. Joseph, Washington, D. C.
Minot, Charles S., Milton.
Mitton, Edward J., Brookline.
Mixter, George, Boston.
Monteith, David, Dedham.
Montgomery, Alexander, Natick.
Montgomery, Alexander, Jr., Natick.
Moore, George D., Arlington.
Moore, John H., Concord.
Morgan, George H., New York, N. Y.
Morse, John T., Jr., Boston.
Morse, Robert M., Jamaica Plain.
Morton, James H., Mattapan.
Moseley, Charles H., Roxbury.
Motley, E. Preble, Boston.
Mudge, George A., Portsmouth, N. H.
Murdock, Albert L., Boston.
Murray, Peter, Fairhaven.
Mutch, John, Newtonville.

Nevins, Mrs. David, Methuen.
Newman, John R., Winchester.
Newton, Rev. William W., Pittsfield.
Nickerson, Mrs. George A., Dedham.
Norton, Charles W., Allston.
Norton, Edward E., Boston.

Oakman, Hiram A., North Marshfield.
Olmstead, Frederick Law, Jr., Brookline.
Olmstead, John C., Brookline.
Orpet, Edward O., South Lancaster.

Page, Mrs. Henrietta, Boston.
Paige, Clifton H., Mattapan.
Parker, Charles W., Boston.
Parkman, Henry, Boston.
Parsons, John E., Lenox.
Patten, Marcellus A., Tewksbury.
Paul, Alfred W., Dighton.
Peabody, Francis H., Boston.
Peabody, George A., Danvers.
Peabody, John E., Salem.
Peabody, S. Endicott, Salem.
Peck, William G., Arlington.
Pierce, Miss Marion W., Topsfield.
†Perry, George W., Malden.
Pfaff, Col. Charles, South Framingham.
Phillips, John C., North Beverly.
Phillips, Mrs. John C., North Beverly.
Phillips, William, North Beverly.
Pickman, Dudley L., Boston.
Pickman, Mrs. Ellen R., Boston.
Pierce, Dean, Brookline.
Pierce, Elisha N., Waltham.
Pierce, George Francis, Neponset.
Pond, Preston, Winchester.

Pope, Col. Albert A., Cohasset.
Porter, Alexander S., Boston.
Porter, James C., Wollaston.
Porter, Hon. Joseph S., Washington, D. C.
Prang, Louis, Boston.
Pratt, Laban, Dorchester.
Pratt, Lucius G., West Newton.
Pratt, Robert M., Boston.
Prendergast, J. M., Boston.
Prescott, Eben C., New York, N. Y.
Presson, Alfred, Gloucester.
Preston, Howard Willis, Providence, R. I.
Pringle, Cyrus G., Charlotte, Vt.
Proctor, T. E., Boston.
Prouty, Gardner, Littleton.
Putnam, George, Manchester.
Putnam, George J., Brookline.
Putnam, Joshua H., Newton Centre.

Quinby, Hosea M., M. D., Worcester.

Raddin, Everett W., North Cambridge.
Rand, Harry S., North Cambridge.
Rand, Oliver J., Cambridgeport.
Rawson, Herbert W., Arlington.
Rawson, Warren W., Arlington.
Ray, James F., Franklin.
Raymond, Walter, Boston.
Read, Charles A., Manchester.
Reardon, Edmund, Cambridgeport.
Reardon, John B., Boston.
Reed, Henry R., Jamaica Plain.
Rice, George C., Worcester.
Rich, William P., Chelsea.
Richards, John J., Brookline.
Richardson, Charles E., Brookline.
Richardson, Dr. William L., Boston.
Rinn, J. Ph., Boston.
Ripley, Charles, Dorchester.
Ripley, Ebed L., Hingham Centre.
Robb, Russell, Concord.
Robinson, John, Salem.
Robinson, Joseph B., Dorchester.
Roffe, Albert H., Newton Centre.
Rogers, H. H., Fairhaven.
Rogers, Mrs. Jacob C., Peabody.
Roland, Thomas, Nahant.
Rothwell, James E., Brookline.
Roy, David Frank, Malden.
Ruddick, William H., M. D., South Boston.
Russell, George, Woburn.
Russell, James S., Milton.
Russell, Walter, Arlington.

Salisbury, William C. G., Brookline.
Saltonstall, Richard M., Chestnut Hill.
Sanford, Oliver S., Wellesley.
Sanger, Mrs. George P., Boston.
Sargent, Andrew Robeson, Brookline.
Sargent, Charles S., Brookline.
Sargent, Mrs. Charles S., Brookline.
Sargent, Charles Sprague, Jr., Brookline.
Sargent, Mrs. Francis W., Wellesley.
Sawtelle, Eli A., Amherst, N. H.
Sawyer, Timothy T., Boston.
Scorgie, James C., Cambridge.
†Scott, Charles, Newton.
Sears, Miss Clara E., Boston.
Sears, Miss Emily E., Boston.
Sears, Dr. Henry F., Boston.
Sears, J. Montgomery, Boston.
Sears, Mrs. J. Montgomery, Boston.

Shaler, Nathaniel S., Cambridge.
Sharp, Miss Helen, Boston.
Shaw, Christopher C., Milford, N. H.
Shaw, Francis, Wayland.
Shaw, Mrs. Robert G., Wellesley.
Shorey, John L., Lynn.
Shuman, Hon. A., Roxbury.
Shurtleff, Josiah B., Jr., Revere.
Sias, Charles D., Wenham.
Siebrecht, H. A., New Rochelle, N. Y.
Simpkins, Miss Mabel, Yarmouth.
Skinner, Francis, Boston.
Skinner, Francis, Jr., Dedham.
Sleeper, Henry Davis, Boston.
Smiley, Daniel, Lake Mohonk, N. Y.
Smith, Archibald, West Somerville.
Smith, Calvin W., Wellesley Hills.
Smith, Charles H., Newton Highlands.
Smith, Charles S., Lincoln.
Smith, Edward N., San Francisco, Cal.
Smith, Thomas Page, Waltham.
Snow, Eugene A., Melrose.
Sohier, Col. William D., Beverly.
Souther, Charles H., Jamaica Plain.
Spaulding, Edward, West Newton.
Spooner, William H., Jamaica Plain.
Sprague, Isaac, Wellesley Hills.
Springall, George, Malden.
Stearns, Charles H., Brookline.
Stearns, Frank W., Newton.
Stedman, Henry R., M. D., Roslindale.
Stevens, Hon. Moses T., Andover.
Stewart, William J., Winchester
Stone, Charles A., Newton.
Stone, Charles W., Boston.
Stone, Prof. George E., Amherst.
Stone, George F., Chestnut Hill.
Strater, Herman, Roxbury.
Strong, William C., Waban.
Sturgis, Richard Clipston, Boston.
Swain, Charles E., Roxbury.
Sweet, Everell F., Malden.

Taylor, Charles H., Boston.
Taylor, Horace B., Portland, Me.
Temple, Felker L., Boston.
Tenney, C. H., Methuen.
Thatcher, William, Brookline.
Thayer, Mrs. Alice R., Boston.
Thayer, Bayard, Lancaster.
Thayer, Mrs. Bayard, Lancaster.
Thayer, Eugene V. R., South Lancaster.
Thayer, Mrs. Eugene V. R., South Lancaster.
Thayer, Henry J., Boston.
Thayer, John E., South Lancaster.
Thayer, Mrs. John E., South Lancaster.
Thayer, Nathaniel, Lancaster.
Thayer, Mrs. Nathaniel, Lancaster.
Thayer, S. V. R., Boston.
Thiemann, Hermann, Owasso, Mich.
Thomas, W. B., Manchester.
Thurlow, Thomas C., West Newbury.
Tilton, Stephen W., Allston.
Tolman, Benjamin, Concord.
Tolman, Miss Harriet S., Boston.
Toppan, Roland W., Malden.
Torrey, Everett, Charlestown.
Tower, Miss Ellen May, Lexington.

Tower, Mrs. Helen M., Cambridge.
Tower, Sylvester, Boston.
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Underwood, Loring, Belmont.

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Vaughan, William Warren, Boston.
Vinal, Miss Mary L., Somerville.

Wakefield, E. H., Cambridge.
Walcott, Henry P., M. D., Cambridge.
Waldo, C. Sidney, Jamaica Plain.
Wales, George O., Braintree.
Walker, Miss Mary Sophia, Waltham.
Walsh, Michael H., Woods Hole.
Waltham, George C., Dorchester.
Walton, Daniel G., Wakefield.
Warburton, Chatterton, Fall River.
Ward, Francis Jackson, Roxbury.
Ward, John, Newton Centre.
Ware, Benjamin P., Clifton.
Ware, Miss Mary L., Boston.
Warren, Samuel D., Dedham.
Washburn, Andrew, Hyde Park.
Watson, Benjamin M., Jamaica Plain.
Watson, Thomas A., East Braintree.
Watts, Isaac, Waverley.
Webster, Hollis, Cambridge.
Welch, David, Dorchester.
Welch, Edward J., Dorchester.
Weld, Christopher Minot, Readville.
Weld, George W., Boston.
Weld, Richard H., Boston.
Weld, Gen. Stephen M., Dedham.
West, Mrs. Maria L., Neponset.
Wheeler, Frank, Concord.
Wheeler, James, Brookline.
Wheeler, Wilfred, Concord.
Wheelwright, A. C., Brookline.
Wheelwright, Edmund M., Boston.
Whitcomb, William B., Medford.
White, Mrs. Charles T., Boston.
White, Francis A., Brookline.
White, George R., Boston.
White, Joseph H., Brookline.
Whitney, Arthur E., Winchester.
Whitney, Ellerton P., Milton.
Whitney, Henry M., Cohasset.
Whittier, George E., Groton.
Whittier, William Benjamin, South Framingham.
Wigglesworth, George, Milton.
Wilbur, George B., Woods Hole.
Wilder, Edward Baker, Dorchester.
Wilder, Henry A., Malden.
Willard, E. W., Newport, R. I.
Willcutt, Levi L., Brookline.
Williams, Miss Adelia Coffin, Roxbury.
Williams, Benjamin B., Boston.
Williams, Henry Bigelow, Boston.
Williams, John Davis, Boston.
Williams, Philander, Taunton.
Wilson, Col. Henry W., Boston.
Wilson, William Power, Boston.
Winthrop, Robert C., Jr., Boston.
Wood, William K., West Newton.
Wright, George C., West Acton.
Wright, John G., Brookline.
Wyman, Oliver B., Shrewsbury.
Wyman, Windsor H., North Abington.

ANNUAL MEMBERS.

Members of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Alles, William H., Chestnut Hill.
Anderson, George M., Milton
Atkinson, Miss Caroline P., Brookline.
Atkinson, Edward, Brookline.
Ayres, Miss Helen F., Medford.

Bangs, Francis R., Boston.
Barker, John G., South Bend, Ind.
Barr, John, Wellesley.
Bigelow, Arthur J., Eastlake, Worcester.
Bigelow, Mrs. Nancy J., Southborough.
Bird, John L., Dorchester.
Blackmur, Paul R., Quincy.
Blomberg, Carl, North Easton.
Boyden, Clarence F., Taunton.
Bradley, Miss Abby A., Hingham.
Braman, George H., Newton.
Breck, Charles H., Newton.
Breed, Edward W., Clinton.
Bullard, John C., Cambridge.
Butler, Edward, Wellesley.

Cabot, Miss Mabel, Brookline.
Carpenter, Frank O., West Roxbury.
Chase, Joseph S., Malden.
Child, Stephen, Auburndale.
Chubbuck, Isaac Y., Roxbury.
Clapp, Henry L., Roxbury.
Clark, John W., North Hadley.
Clark, Joseph, Manchester.
Clark, Theodore M., Newtonville.
Clinkaberry, Henry T., Trenton, N. J.
Collins, Frank S., Malden.
Coolidge, Dr. Sumner, Watertown.
Cotter, Lawrence, Danville, Pa.
Crosby, J. Allen, Jamaica Plain.
Curtis, Joseph H., Boston.
Curtis, Louville, Tyngsborough.

Davis, Frederick S., West Roxbury.
Derby, William H., Revere.
Dolbear, Mrs. Alice J., College Hill.
Dorr, George B., Boston.
Doyle, William E., Cambridge.
Duffley, Daniel, Brookline.
Duncan, John W., West Roxbury.

Eastman, Edmund C., Brookline.
Endicott, Miss Charlotte M., Canton.
Eustis, William Tracy, Brookline.
Evans, Frank H., Malden.
Ewell, Marshall F., Marshfield Hills.

Farlow, Mrs. William G., Cambridge.
Fenno, Warren, Revere.
Fisher, Sewell, Boston.
Fiske, Harry E., Wollaston.
Fitzgerald, Desmond, Brookline.
Fletcher, Fred W., Auburndale.
Forbes, William H., Jamaica Plain.
Foster, Lucius H., Dorchester.
Francis, George E., M. D., Worcester.
Freeman, Miss Harriet E., Boston.
Fuller, T. Otis, Needham.

Garthley, James, Fairhaven.
Gill, Mrs. E. M., Medford.
Grew, Henry Sturgis, Boston.
Grey, Robert Melrose, Belmont, Cuba.
Grey, Thomas J., Chelsea.

Hall, Stacy, Boston.
Hallstram, Charles W., West Somerville.
Ham, Fernald E., Burlington.
Harrison, C. S., York, Nebraska.
Harrison, Thomas, Melrose Highlands.
Hartwell, Samuel, Lincoln.
Hatfield, T. D., Wellesley.
Hawes, Cyrus Alger, Brookline.
Herff, B. van, New York, N. Y.
Heustis, Warren H., Belmont.
Hildreth, Miss Ella F., Lowell.
Hill, Arthur Dehon, Boston.
Hill, J. Willard, Belmont.
Hinds, Warren D., Townsend.
Hollis, George, South Weymouth.
Houghton, George S., West Newton.
Hovey, Charles L., Waban.
Howden, Thomas, Whitinsville.
Hubbard, Allen, Newton Centre.
Hubbard, F. Tracy, Cambridge.
Huston, Miss Katharine W., Jamaica Plain.

Illenberger, Henry, Brookline.
Ireland, Robert D., Winthrop.

James, Robert Kent, Newton Centre.
Jameson, G. W., East Lexington.
Johnston, Robert, Lexington.

Keith, Mrs. Mary R., Washington, D. C.
Kelsey, Harlan P., Boston.
Kemp, William S., Brookline.
Kennard, Frederic H., Brookline.
Kimball, Richard D., Waban.
Knott, N. W. T., Waban.

Lancaster, Mrs. E. M., Roxbury.
Laurie, Robert, Newport, R. I.
Lawson, Joshua, Brookline.
Lewis, E. L., Taunton.
Lincoln, Miss Agnes W., Medford.
Lomax, George H., Somerville.
Loring, Mrs. Thacher, Boston.
Loring, William C., Beverly.
Lothrop, Thornton K., Boston.
Low, Hon. Aaron, Hingham.
Lumsden, David, Roslindale.

McLaren, Anthony, Westwood.
Manda, W. A., South Orange, N. J.
Manning, A. Chandler, Reading.
Manning, Richard C., Salem.
Martin, William J., Milton.
Meriam, Horatio C., D. M. D., Salem.
Metcalf, Dr. Ben H., Winthrop.
Milman, William, Roxbury.
Moody, Abner J., Lexington.
Morgan, George M., Boston.
Morrison, William, Cohasset.
Moseley, Frederick C., Dorchester.
Moseley, Frederick Strong, Newburyport.
Munson, Prof. W. M., Orono, Me.

Newton, John F., Roxbury.
Nicholson, William, Framingham.
Nixon, Arthur, Taunton.
Norton, Michael H., Boston.
Norton, Patrick, Dorchester.

Oakes, F. L., Newton.

Park, William D., Boston.
Parker, John, Newtonville.
Parker, Walter S., Reading.
Pettigrew, John A., Jamaica Plain.
Pierce, Mrs. F. A., Brookline.
Pray, James Sturgis, Cambridge.
Pritchard, John, Brighton.
Purdie, George A., Ormond, Florida.

Rea, Charles H., Norwood.
Rea, Frederic J., Norwood.
Rich, Miss Ruth G., Dorchester.
Rich, William E. C., Roxbury.
Richards, Mrs. P. D., West Medford.
Robb, Peter B., Whitinsville.
Robinson, Walter A., Arlington.
Rodman, Miss Mary, Concord.
Ross, Charles W., Newtonville.
Ross, Henry Wilson, Newtonville.
Ross, Walter D., Worcester.

Sander, Charles, Brookline.
Saunders, Miss Mary T., Salem.
Scott, Augustus E., Lexington.
Scudder, Samuel H., Cambridge.
Searles, E. F., Methuen.
Seaver, Edwin P., Waban.
Sharples, Stephen P., Cambridge.
Shaw, Hon. Edward P., Newburyport.
Shea, James B., Jamaica Plain.
Stevens, Mrs. Mary L., Brookline.
Stone, Joshua C., Watertown.
Strange, David T., Stoneham.
Sullivan, Michael, Revere.
Sutherland, George A., Roslindale.
Swan, Charles W., M. D., Brookline.

Tailby, Joseph, Wellesley.
Teele, William H., West Acton.
Tobey, Rufus T., Roxbury.
Tyler, Mrs. John F., North Andover.
Tyndale, Theodore H., Weymouth.

Vaughan, J. C., Chicago, Ill.

Ware, Horace E., Milton.
Warren, Samuel H., Weston.
Waugh, Prof. F. A., Amherst.
Welch, Patrick, Dorchester.
Westwood, Thomas H., Jamaica Plain.
Wheeler, Ezra H., Dorchester.
Wheeler, Henry A., Newtonville.
Wheelwright, George William, Jamaica Plain.
Whiton, Hon. Starkes, Hingham Centre.
Wilder, Miss Grace S., Dorchester.
Wilder, Miss Jemima R., Dorchester.
Wilkie, Edward A., Newtonville.
Winter, William C., Mansfield.
Wood, Mrs. Anna D., West Newton.
Wood, Elijah A., West Newton.
Wood, E. W., West Newton.
Woodford, Joseph H., Boston.
Woods, Henry F., Boston.

Young, E. Bentley, Boston.

Zirngiebel, Denys, Needham.

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The Library of the Massachusetts Horticultural Society offers for sale or in exchange a large number of duplicate books and pamphlets, reports of agricultural and horticultural societies, and periodicals, of which the following is a partial list.

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* Some numbers or volumes wanting.

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