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PROCEEDINGS

OF

**American Pomological
Society**



Session of 1907



PROCEEDINGS OF THE
THIRTIETH SESSION
OF THE AMERICAN
POMOLOGICAL SOCIETY

HELD ON THE EXPOSITION
GROUNDS AT JAMESTOWN,
VIRGINIA, SEPT. 24-26, 1907.

Compiled by the Secretary :: Published by the Society

UNIVERSITY OF
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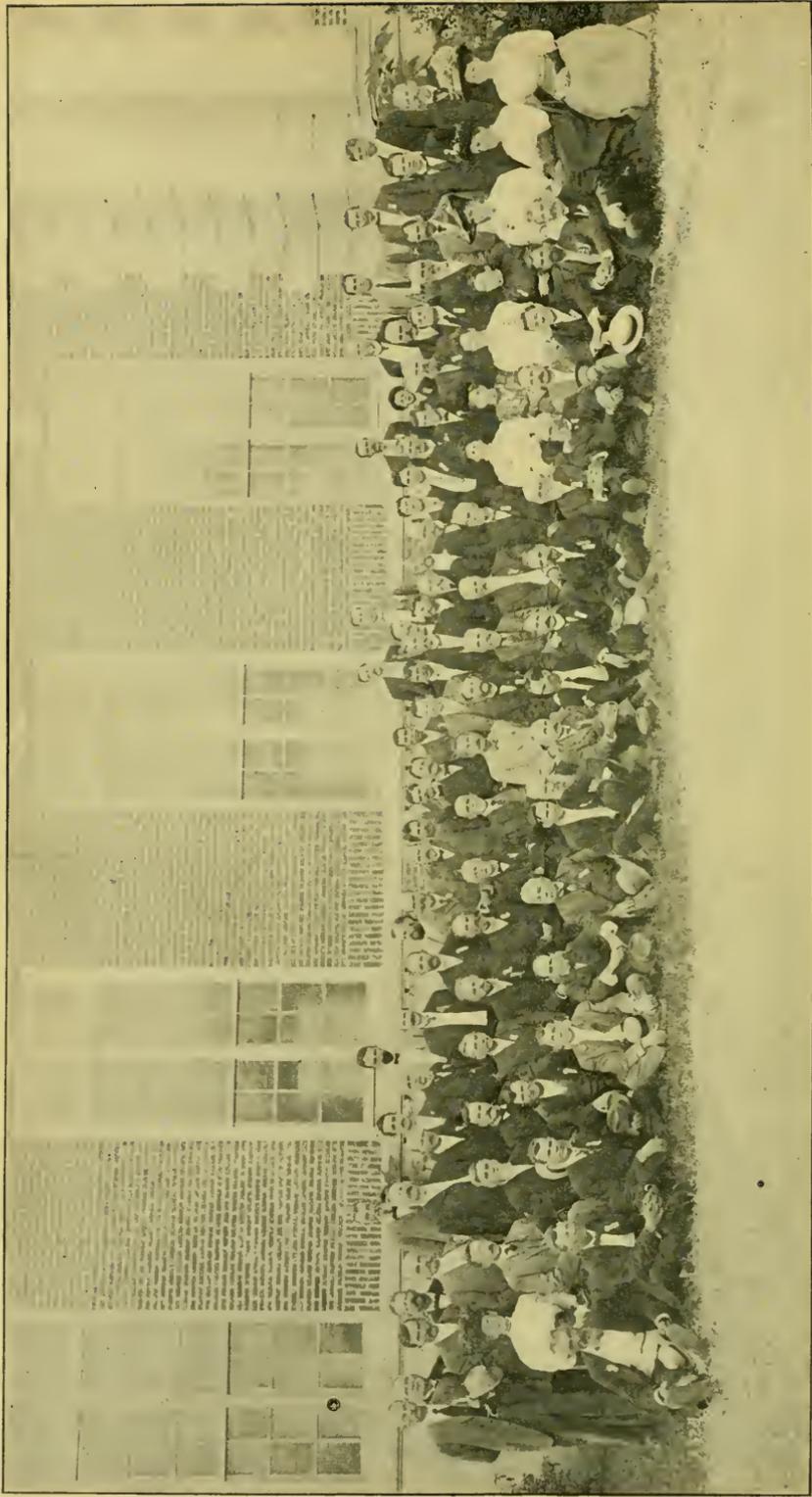
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MEMBERS IN ATTENDANCE AT THE AMERICAN POMOLOGICAL SOCIETY, JAMESTOWN, VA.,
SEPTEMBER 24-26, 1907.

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American Pomological Society

Organized 1848.

Incorporated 1887.

ACT OF INCORPORATION.

COMMONWEALTH OF MASSACHUSETTS, 1887.

SECTION 1. Patrick Barry, of Rochester, New York, Charles W. Garfield, of Grand Rapids, Michigan, Benjamin G. Smith, of Cambridge, Massachusetts, J. J. Thomas, of Union Springs, New York, Prosper J. Berckmans, of Augusta, Georgia, Robert Manning, of Salem, Massachusetts, their associates, the Officers and Members of the Association known as the American Pomological Society, and their successors, are hereby made a corporation under the name of "American Pomological Society," for the purpose of promoting and encouraging the culture of fruit, with all the powers and privileges and subject to all the duties and liabilities set forth in the general laws which are now or may hereafter be in force applicable to such corporations.

SEC. 2. Said corporation may, for the purposes aforesaid, have and hold by purchase, grant, gift or otherwise, real and personal property to an amount not exceeding one hundred thousand dollars.

SEC. 3. Said corporation may hold its annual meeting, or any special meeting in any place, state or county it may determine, provided that due notice shall be given to the members thereof of the time and place of said meeting.

SEC. 4. Any two of the corporators above named are hereby authorized to call the first meeting of said corporation in the month of September next ensuing, by due notice thereof to each member of said Association.

BEQUEST FROM THE WILL OF THE LATE MARSHALL P. WILDER.

"Eleventh. I give to the American Pomological Society *one thousand dollars* the income of which shall be, from time to time, offered in *Wilder Medals* for objects of special merit.

"Also, the further sum of *four thousand dollars*, for the general purposes of the Society."

Constitution and By-Laws .

CONSTITUTION.

Article 1. The name of this Association shall be the AMERICAN POMOLOGICAL SOCIETY.

2. Its object shall be the advancement of the science of Pomology.

3. It shall consist of delegates appointed by Horticultural, Agricultural and kindred Societies in the United States, and British America, and of such other persons as take an interest in the welfare of the Association, and are desirous of promoting its aims. They shall pay two dollars for each session, and twenty dollars paid at one time shall constitute a life membership.

4. The meetings shall be held biennially, at such time and place as may be designated by the Society; and special meetings may be convened at any time on the call of the President.

5. The officers shall consist of a President, a First Vice-President, one Vice-President from each State, Territory and Province, a Treasurer and a Secretary, who shall be elected by ballot or otherwise at each biennial meeting.

6. Libraries and educational institutions may become life members upon payment of twenty dollars; such membership shall be limited to thirty years.

BY-LAWS.

1. The President shall have a general superintendence of the affairs of the Society during its vacation; give due public notice of the time and place of meeting; preside at its deliberations; deliver an address on some subject relating to Pomology, at each biennial meeting; and appoint all committees unless otherwise directed.

2. In the case of the death, sickness or inability of the President, his official duties shall devolve on the First Vice-President, or such one of the Vice-Presidents as the Society may elect by ballot or otherwise.

3. The Treasurer shall receive all moneys belonging to the Society, and pay over the same on the written orders of the President.

4. There shall be a Finance Committee of three members appointed by the President at each biennial meeting.

5. The Secretary shall, with the assistance of a reporter appointed by him, keep a record of the transactions of the Society for publication.

6. There shall be an Executive Committee consisting of five members, together with the President and Vice-President, *ex-officio*, five of whom shall constitute a quorum, who shall manage the affairs of the Society during its vacation.

7. A Chairman of Fruit Committees, for each State, Territory and Province and a General Chairman over all, shall be appointed biennially. It shall be the duty of such Chairman to appoint four additional members of his committee, and with their aid and such information as he can procure, to forward to the General Chairman one month before each biennial meeting, State Pomological Reports, to be condensed by him for publication.

8. A Standing Committee on New Fruits of American Origin, consisting of eleven members, shall be appointed by the President, immediately after his election. It shall be the duty of this Committee to report biennially on new fruits of American origin, and also to examine, and before the close of the session report on, all new seedling varieties that may be exhibited and to make an *ad interim* report on those that were exhibited in an unripe condition at the meeting of the Society, but had subsequently attained a state of maturity; and on such other seedlings as may have been submitted to their inspection during the Society's vacation.

9. A Standing Committee on Foreign Fruits, consisting of eleven members, shall be appointed, whose duties shall be similar to those of the committee in By-Law Eight.

10. A Standing Committee on Tropical and Sub-Tropical Fruits, consisting of eleven members, shall be appointed, whose duties shall be similar to those of the committee in By-Law Eight.

11. A Standing Committee on Nomenclature, consisting of seven members, shall be appointed biennially.

12. Vacancies occurring in committees shall be filled by the chairman of each, and in case of his death or inability to serve, his place shall be supplied by the President of the Society.

13. The order of business for each meeting shall be arranged by the Executive Committee.

14. The Constitution or By-Laws may be altered or amended, at any regular biennial meeting, by a vote of two-thirds of the members present.

Officers and Standing Committees
of the
American Pomological Society
For 1907-1908

PRESIDENT:

L. A. GOODMAN, KANSAS CITY, MISSOURI.

FIRST VICE-PRESIDENT:

T. V. MUNSON, DENISON, TEXAS.

SECRETARY:

JOHN CRAIG, ITHACA, NEW YORK.

TREASURER:

L. R. TAFT, AGRICULTURAL COLLEGE, MICHIGAN.

ASSISTANT SECRETARY:

L. B. JUDSON, ITHACA, NEW YORK.

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Arizona	H. W. Adams, Glendale
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British Columbia	R. M. Palmer, Victoria
California	Luther Burbank, Santa Rosa
Colorado	W. S. Coburn, Paonia
Connecticut	N. S. Platt, New Haven
Cuba	C. F. Austin, Santiago de las Vegas
Delaware	S. H. Derby, Woodside
District of Columbia	G. B. Brackett, Washington
Florida	G. L. Taber, Glen St. Mary
Georgia	P. J. A. Berckmans, Jr., Augusta
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Idaho	A. McPherson, Boise
Illinois	H. M. Dunlap, Savoy
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Iowa	C. G. Patten, Charles City

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Kentucky	C. W. Matthews, Lexington
Louisiana	F. H. Burnette, Baton Rouge
Maine	W. M. Munson, Orono
Manitoba	S. A. Bedford, Brandon
Maryland	J. S. Harris, Coleman
Massachusetts	O. B. Hadwen, Worcester
Michigan	C. J. Monroe, South Haven
Minnesota	S. B. Green, St. Anthony Park
Mississippi	A. M. Augustine, West Point
Missouri	C. H. Dutcher, Warrensburg
Montana	F. B. Linfield, Bozeman
Nebraska	G. A. Marshall, Arlington
Nevada	Ross Lewers, Franktown
New Hampshire	C. C. Shaw, Milford
New Jersey	I. J. Blacknell, Titusville
New Mexico	Parker Earle, Roswell
New York	F. M. Hexamer, New York City
North Carolina	J. Van Lindley, Pomona
North Dakota	C. B. Waldron, Fargo
Northwest Territories	Angus Mackay, Indian Head
Nova Scotia	R. W. Starr, Wolfville
Ohio	W. R. Lazenby, Columbus
Oklahoma	O. M. Morris, Stillwater
Ontario	A. H. Pettit, Grimsby
Oregon	E. L. Smith, Hood River
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South Dakota	H. C. Warner, Forestburg
Tennessee	John Wieland, Knoxville
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Utah	Thomas Judd, St. George
Vermont	Wm. Stuart, Burlington
Virginia	S. B. Woods, Charlottesville
Washington	N. G. Blalock, Walla Walla
West Virginia	S. W. Moore, Elwell
Wisconsin	S. H. Marshall, Madison
Wyoming	B. C. Buffum, Laramie

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W. T. Macoun	Ottawa, Canada

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W. C. Strong	Waban, Massachusetts
E. M. Pollard	Nehawka, Nebraska

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Arizona	J. A. Ream, Phoenix
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British Columbia	R. M. Palmer, Victoria
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Colorado	Wendell Paddock, Ft. Collins
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Idaho	Chas. P. Hartley, Caldwell
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Kentucky	C. W. Mathews, Lexington
Louisiana	F. H. Burnette, Baton Rouge
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Northwest Territories	George Lang, Indian Head
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Ohio	W. J. Green, Wooster
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 (For Michigan Agricultural College.)
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- Holmes, E. S. Grand Rapids, Mich.
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- Hussman, Geo. C. Department of Agriculture, Washington, D. C.
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 (For Ontario Agricultural College.)
- Hutt, Wm. N. Raleigh, N. C.
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- Jeter, Tinsley Bethlehem, Pa.
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- Kendall, Geo. F. Cambridge, Mass.
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- Leighton, G. B. F. Alfred, Me.

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(For Alabama Polytechnic Institute.)	
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(For Central Experimental Farm.)	
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Munson, D. O.	Falls Church, Va.
Murray, R. D.	Key West, Fla.
Myers, Wm. S.	16 John St., New York City, N. Y.
Neame, F. Ivo.	Macnade, Faversham, Eng.
Noble, Samuel W.	Jenkintown, Pa.
N. C. College of Agr., Dept. of Hort.	Raleigh, N. C.
Oregon Agricultural Experiment Station	Corvallis, Ore.
Orton, Samuel W.	Binghamton, N. Y.
Pearson, John M.	Godfrey, Ill.
Periam, Jonathan.	1044 Pratt Av., Rogers Pk., Chicago, Ill.
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Phoenix, F. K.	Delevan, Wis.
Popenoe, E. A.	Manhattan, Kan.
(For Kansas Agricultural College.)	

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Ream, J. A.	Phcenix, Ariz.
Richardson, Chas. E.	Brookline, Mass.
Riehl, E. A.	Alton, Ill.
Ring, C. A.	Appleton, N. Y.
Robinson, Chas. A.	Crozet, Va.
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Rumph, Samuel H.	Marshallville, Ga.
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Rust, David	Horticultural Hall, Philadelphia, Pa.
Sadler, O. W.	Pittsburg, Pa.
Sampson, F. G.	Boardman, Fla.
Sandsten, E. P.	Madison, Wis.
(For University of Wisconsin.)	
Sapporo Agricultural College	Sapporo, Hokkaido, Japan.
Selover, Edward C.	Auburn, N. Y.
Shaw, C. C.	Milford, N. H.
Shepard, C. U.	Summerville, S. C.
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Smith, Wing R.	Syracuse, N. Y.
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Stark, Wm. Henry	Louisiana, Mo.
Starr, Robert W.	Wolfville, N. S.
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Streator, Geo. J.	Rosedale, Seaside Ave., Santa Cruz, Cal.
Strong, Wm. C.	Waban, Mass.
Swineford, Howard	Richmond, Va.
Swingle, W. T.	Department of Agriculture, Washington, D. C.
Taber, G. L.	Glen St. Mary, Fla.
Taft, Edward P.	Providence, R. I.
Taylor, F. W.	St. Louis, Mo.
Taylor, Thomas	238 Mass. Ave., N. E., Washington, D. C.
Taylor, Wm. A.	55 Q St., N. E., Washington, D. C.
Temple, John T.	Davenport, Ia.
Templin, M. B.	Calla, O.

- Texas Agricultural College College Station, Texas.
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 Townsend, B. C. Bay Ridge, N. Y.
 Trelease, Wm. Botanic Garden, St. Louis, Mo.
 Trowbridge, Geo. W. Glendale, O.
 Uber, Carlton A. Glencarlyn, Va.
 Underwood, J. M. Lake City, Minn.
 Utley, H. W. Detroit, Mich.

(For Public Library.)

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 Van Gelder, Jacob Saugerties, N. Y.
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Zion, Jas. M.	Clarks Hill, Ind.

IN MEMORIAM

GEORGE ELLWANGER, Rochester, N. Y.

ADDISON P. FOSTER, New Paltz, N. Y.

T. S. HUBBARD, Geneva, N. Y.

F. L. TEMPLE, Burlington, Vt.

BENJAMIN P. WARE, Clifton, Mass.

W. B. K. JOHNSON, Allentown, Pa.

JACOB MOORE, Canandaigua, N. Y.

JOHN C. TEAS, Carthage, Mo.

GEORGE ELLWANGER*—The death of the venerable George Ellwanger removes the senior member of the noted firm of Ellwanger & Barry, of Rochester, and a valued citizen, from the arena of horticultural and civic activities. For many years he has been one of the most striking figures in the horticultural world. His life was a long and successful one. Had he lived a week longer he would have attained the ripe age of 90. He was born in the province of Wurtemberg, Germany, December 2, 1816, and came to the United States in 1835. Passing through the city of Rochester, he was attracted by its beauties and natural resources, and after some prospecting farther west, he returned to engage in business with the firm of Reynolds & Bateham. In 1840 he formed a partnership with the late Patrick Barry.

The firm of Ellwanger & Barry has been closely associated with the aesthetic and economic advances of horticulture for more than half a century. Mr. Ellwanger had a keen eye for distinctions, values and characteristics of trees. He knew them and loved them. Mr. Barry was eminently a pomologist. The combination of two men with these ideals was rare, the result most happy. Although for the past three

* Abstracted from editorials by Secretary Craig in the "National Nurseryman" for December, 1906, and January, 1907.

years Mr. Ellwanger has been an invalid and confined to his room, his interest in horticultural matters has never declined.

Mr. Ellwanger was connected with many philanthropic movements in Rochester, both personally and as a member of the firm. He not only aided, but originated charitable enterprises. The establishment of Highland Park, one of the handsomest recreation areas in the country, was due to the generosity of this firm. As a business man, the judgment of the senior member was relied upon, and his counsel frequently requested by the executive bodies of various business associations in the city of Rochester. The space given in the news and editorial columns of the Rochester papers is a strong tribute to the esteem in which his memory is held. In the culture and literary productions of the sons of this scholarly man, the fruits of a home training are clearly discerned. He has gone to his reward, but the fruits of his labors shall live after him.

REVEREND ADDISON P. FOSTER, a life member, died in June, 1907.

THEODORE S. HUBBARD died at his home in Geneva, N. Y., July 6, 1906, at the age of 63. Mr. Hubbard had been in delicate health for some years and was aware that his summons might come suddenly, but had been unusually well of late. The end came without warning or suffering, from cerebral hemorrhage. He was born in Cameron, N. Y.; was an alumnus of Alfred University; and was widely known as one of the leading grape growers in the world. He was the pioneer in the business of propagating grapevines in Chautauqua County, later establishing the company in Fredonia, which still bears his name and which was for many years the largest of the kind in America. He helped draft the constitution of the Association of American Nurserymen, and was twice its chief executive. Public spirited and progressive, the same energy and fidelity which marked his business career, he devoted to the welfare and growth of his town, and conspicuously to her no-license victories. To the Presbyterian Church he was a tower of strength, serving continuously as trustee and elder, first in Fredonia and then in Geneva; and to no other work of the years of his prime did he devote with such pleasure his energies, his time and his strength, as to the building up and growth of the church in Fredonia. In 1899 he severed his connection with the T. S. Hubbard Co. to give his attention to private affairs and to philanthropy. A man of wide interests, he was twice Commissioner to the General Assembly of the Presbyterian Church; was Commissioner to Auburn Theological Seminary for many years; was one of its trustees and examining board; was also trustee of Hamilton College, in which he endowed two scholarships, and gave some of his best work on the executive committee of the New York

State Sunday School Association and the board of Synodical Aid for weak churches. Believing that a man should be his own almoner, distributing his benevolences during life, rather than after its close, his gifts to charity were large, especially to the missionary boards. He contributed regularly to about two hundred different charities.

FELKER L. TEMPLE, a well known nurseryman and landscape gardener, died at the home of Captain H. C. Whitmore in Hampden, Mass., his native town, March 29, 1906. For twenty years he was connected with the Shady Hill nurseries at Somerville, Mass., and later had nurseries in Westminster, Vt., and Bucksport, Me.

BENJAMIN POND WARE was born in Salem, Mass., April 9, 1822, and died in Marblehead, February 7, 1906, at the age of 84 years. During his long and active life he was connected with many societies devoted to agricultural and horticultural interests. He was a life member of the American Pomological Society and of the Massachusetts Horticultural Society, being prominent in the councils of the latter, which he served as vice-president from 1896 to 1903. For sixteen years, from 1875 to 1891, he was president of the Essex County Agricultural Society; for ten years a trustee of the Massachusetts Agricultural College; for nine years a trustee of the New England Agricultural Society; for four years president of the Marblehead and Swampscott Farmers' Club; and master of the State Grange of Massachusetts for two years. As a speaker he was very attractive by reason of his agreeable and pleasant personality and the distinctness of every word he uttered; and he always commanded the attention and interest of his audience in everything he had to say. His habit of close and careful observation of all subjects pertaining to agriculture enabled him to acquire a large fund of information that made his lectures of noteworthy interest. Mr. Ware was an earnest advocate of the establishment of a State Agricultural Experiment Station. Thoroughly interested in every department of agriculture, which he placed in the front rank of all our national industries, he earnestly advocated its advancement. He was ever ready to accept all scientific methods that tended to the better performance of the labor of the farm. Himself a practical agriculturist, he was proud to be known as a Massachusetts farmer. (Abridged from sketch of life in Transactions of the Mass. Hort. Soc., 1906, pp. 246, 247.)

W. B. K. JOHNSON, of Allentown, Pa., one of the leading nurserymen of Pennsylvania, died January 22, 1907, aged 70 years. He made his fortune in the early 70's, when he made trips to Cuba and South America, importing shiploads of parrots to the United States and selling them at great profit. He was an authority on fruit growing, and was long on the staff of both the Pennsylvania and National Agricul-

tural Departments. In his large nurseries near Allentown, he had more than a million trees.—*American Fruits*.

JACOB MOORE died in Canandaigua, New York, February 11, 1907, aged 72 years. He devoted his life to the crossing and originating of various fruits. Among his productions were the Hooker seedling strawberry, the Brighton and Diana Hamburg and Moore's Diamond grape, also many varieties of currants. Some of his experiments were incomplete at the time of his death. He spent many years and continued up to the time of his decease petitioning Congress to pass a law protecting originators of fruit. His labors were not a financial success. The fact is that an inventor of almost any other luxury or necessity may reap a large or partial reward by a patent, but a fruit originator must labor for humanity almost without reward. He was well known among nurserymen and horticulturists.—*American Fruits*.

*JOHN C. TEAS will ever be remembered as one who contributed his full share towards beautifying and making better this world of ours. His creation and preservation of the weeping mulberry is but one of the many contributions he gave us while sojourning on earth. A native of Indiana, he was born of Friend (Quaker) parentage, in 1827, and remained a resident in Eastern Indiana until 1869, when he removed to Carthage, Missouri, where he continued to live until his death, which occurred on July 29, 1907, having lived to the unusual age of 80 years. He was an industrious, intelligent man, and having lived so long, accomplished more than is usual with mortal man. The writer in the "Memorial and Obituary Committee" report of the American Pomological Society at its Kansas City meeting in September, 1905, took occasion to add a "tribute to the living," in which he said: "Having placed laurel wreaths on the graves of our worthy dead, let us now bestow a word of justly merited praise on a few of our living to whom we owe debts of gratitude." In this list he included the name of John C. Teas, in the following words: "John C. Teas, of Missouri, but formerly of Indiana, was an early participant in the affairs of this (the American Pomological) Society and during a long and useful life, has stood in the front rank among our best and most worthy horticulturists. In a recent letter from him, one of those characteristic letters that he alone can write, he said, "He was never busier in his life, and that he was now rapidly nearing his eightieth milestone in life's journey." Mr. Teas attended the meeting of the American Pomological Society at Rochester,

* Extract from a paper read before the Indiana Horticultural Society in December, 1907. Mr. Teas was not a member of the American Pomological Society at the time of his death, but formerly took an active part in its work.

N. Y., in September, 1856. For a number of years thereafter he kept in touch with the society, and generally as an official representative of our State. He was also well known to Downing and often quoted by the latter in his "Fruits and Fruit Trees of America," as early as the edition of 1857 and in subsequent editions; by Elliott in his "Fruit Book," 1854; by Warder in his "American Pomology—Apples" in 1867; and indeed by all American authors of note of recent years. He was also a frequent contributor to the current literature of horticulture and pomology, and his articles were always terse, instructive and readable. He was one of the first to recognize the good qualities of the *Catalpa speciosa*, and at all times advocated the careful conservation of our natural forests and the planting and care of new forests to supply the rapidly diminishing forests of Nature's planting. He was an early and constant promoter of floriculture, and was the originator and introducer of many new and valuable novelties in all brands of horticulture, including pomology, forestry and floriculture.

SECRETARY'S NOTE.

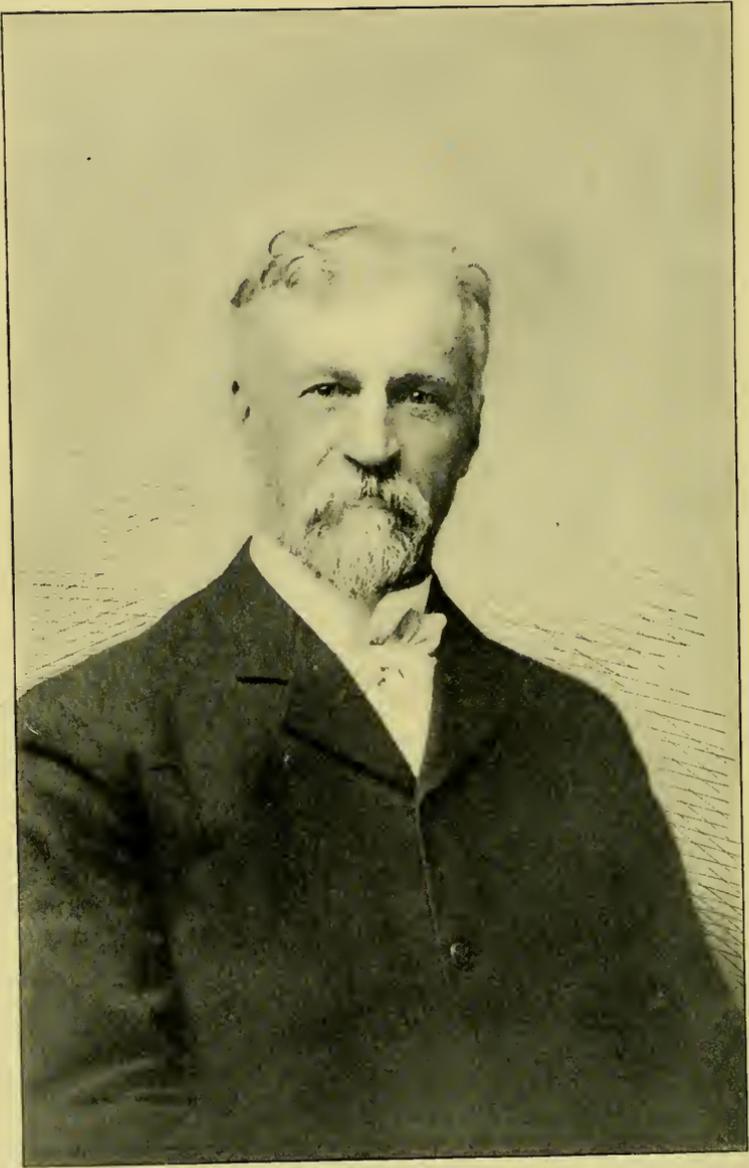
The fortieth biennial session of the American Pomological Society was held on the grounds of the Jamestown Exposition, September 24 to 26, 1907. The Society met there on the invitation of President Tucker and the directors of the Jamestown Exposition, the local horticultural society, and the Virginia State Horticultural Society. The meeting was held in the court of the States' Exhibits Building, which proved to be desirable and agreeable in every way. The members of the society were cordially received, and officially welcomed by President Tucker on behalf of the Exposition, by Lieutenant Governor Edlyson on behalf of the State, and by Samuel B. Woods, representing the State Horticultural Society.

This meeting of the American Pomological Society met in joint session with the Society for Horticultural Science. At the President's table sat Colonel G. B. Brackett, President of the Society for Horticultural Science, and President Goodman of the American Pomological Society. Papers and addresses under the auspices of the two societies were alternately presented. They were full of interest, and the sessions were well attended.

The exhibits of new fruits, especially cross-bred fruits from Canada and the Middle States, were comprehensive and most interesting.

The entertainment features were in charge of Mr. C. Lyman Babcock, chairman of the local committee. These consisted of a watermelon luncheon in the Exhibits Building; a visit to the extensive wine cellars of Garrett and Company, where the members were courteously received by Mr. Paul Garrett, and generously entertained; and a visit to the native home of the Scuppernon grape, through the courtesy of the Norfolk Interurban Railway. On the whole the meeting is to be regarded as an important one in the history of the society, from the standpoint of the papers presented, subjects discussed, and attendance at the sessions.

The writer wishes to acknowledge the efficient services of the Assistant Secretary, Professor Judson, who is responsible for editing and proof-reading this report.



PRESIDENT L. A. GOODMAN, OF KANSAS CITY, MISSOURI.

PROCEEDINGS OF THE
American Pomological Society

AT THE THIRTIETH BIENNIAL SESSION
Jamestown Exposition Grounds, Norfolk, Virginia
September 24, 25 and 26, 1907.

TUESDAY MORNING SESSION.

Court of States Exhibits Building, Sept. 24.

The Thirtieth Biennial Session of the American Pomological Society was called to order by President Goodman in the Court of the States Exhibits Building, on the Exposition Grounds, shortly after 2 P. M.

ADDRESS OF WELCOME.

By Lieutenant Governor Edyson of Virginia.

Ladies and Gentlemen:—It gives me the greatest possible pleasure to say that I am here to represent the Exposition authorities and the great State of Virginia. I understand that I am to appear before a great group of Horticultural Societies, representing various interests, but all concentrated upon the furtherance of an industry intimately associated with economic advancement and esthetic progress. I am unable to consider the present needs of pomology and horticulture, for I do not profess to be an expert in these fields; I will therefore leave a discussion of the commercial and technical phases to the hands of the competent members of your Society. Neither will I attempt a retrospect of the industry in Virginia, nor attempt to forecast its future. We are sure that your meeting here will be of the greatest benefit to the pomology of Virginia and the Tide-water region. I am a firm believer in the beneficent influences of education. I believe that the highest ideals of mankind are the increase of happiness and the improvement of our citizenship. I know of no industry which promotes these two ideals to a greater extent than that of pomology.

There is an economic side also which has an important bearing upon these two ideals, the profits resulting enabling men to send their sons to college, their daughters to the seminary and thus build up the educational standard of our citizenship. Education, as I have said, is my hobby. There is nothing more worth the having than a good education. Particularly is this true in our rural communities, for as the years go by we become more and more dependent upon scientific knowledge for carrying on those important routine operations which fill our granaries and finally bring money to our coffers.

On behalf, therefore, of the Exposition and of the fruit interests of the State of Virginia, let me welcome you to our halls and let me wish you the fullest success, and the best memories upon leaving.

ADDRESS OF WELCOME.

By Mr. Samuel B. Woods, President State Horticultural Society.

Mr. President, Ladies and Gentlemen:—It is a great pleasure to welcome you on behalf of the State of Virginia. It is a gratification to Virginians to receive guests, especially such guests, and we wish you to feel that you have conferred a favor on us by your presence here. We welcome you to the broad plains of Virginia round about us here known as the "Tide-water region," rich in shipping, in fisheries, and in trucking,—the garden of this great section of ours. We welcome you into the valley of Virginia, famous for all the fruits of horticulture and for those apples perfect in flavor, the finest combination of sugar and acid ever compounded in Nature's great laboratory. Queen Victoria used to think that there was no apple as good, as highly flavored, as the Albemarle Pippin, and the London Pomological Society says that the Albemarle Pippin grown on the hills and mountains of Piedmont, Virginia, is the finest apple in the world.

We welcome you, too, to the great Southwest, rich in mines and in timber, on whose hills the night dews keep the blue grass green and tender, affording grazing for thousands of export cattle. I am reliably informed that no where else in the United States are export cattle fattened without grain, except on the blue grass pastures of Virginia. We welcome you to the whole State of Virginia, to our hearts and to our homes. We are glad you are here, and our joy will be greater if you will stay with us always and never leave us. We would feel that a great addition had been made to the brains and enterprise and scientific knowledge of Virginia if we could just induce you to become Virginians. We have lately adopted President Roosevelt, who has become a Virginian. Now, why not you?

Gentlemen, the State of Virginia was very hard hit by the Civil

War; her fields were devastated from year to year, her homes were left black and ruined; and greater than the loss of wealth was the loss of men, for her sons died on every battlefield. After the war was over, Virginia undertook, without calling on the outside world, herself to restore her losses. It was a slow process. In 1890, the country population of Virginia was less than it was in 1860, although in the meantime the population of the United States had grown double. Our State Government in recent years has pursued a more enterprising and a wiser policy. Our Commissioner of Agriculture has been active in telling the world the resources of Virginia, and he has been bending his energies to induce immigration into our State. As a result, increasing numbers have come to us. Last year over 2,200 families from the north and west, from Iowa and the great States of the Mississippi Valley, came to this State and they are helping us now to develop it. We hope that this is just the beginning of a great army who are coming to people our country and to help us, because we need help, we need men. Ten years ago the value of agricultural products of Virginia was \$40,000,000 only; last year they were valued at \$70,000,000, and exclusive of live stock they were worth over \$61,000,000. Richmond has a larger banking capital than any city in the South; the second wealthiest city in the United States per capita is the city of Lynchburg, Virginia. Immigration into Virginia in five years has increased more rapidly than in any State in the South, and to-day Virginia is the richest State in the South with the exception of Texas, which is many times as large. Seventy per cent. of our farms are owned and operated by the farmers themselves, who live upon them. We have 20,000,000 acres of land in Virginia, less than one half of which is under cultivation. Some of our very finest farming lands and some of our best fruit lands, as good as any in the world, can be bought at from \$10 to \$15 per acre.

We hope that you will find our exhibit of fruit here creditable, but we regret very much that this is an off year with us; we were injured by the cold last spring, as most of the orchards of our country were, and we have only about forty per cent. of a crop in the State, and that is of inferior quality. We have these resources that are still undeveloped. Here is a great market with every facility of transportation, and a climate that is unsurpassed, and with people, who, while they hold fast to what is good and true in the past, are turning with hope and energy to a more glorious future, people who value a man for what he himself is, and who appreciate honest efforts and toil, and who will give to all who come with an honest purpose, as we to-day give you, a hearty welcome to old Virginia.

The President: We thank our friend Woods for this hearty welcome. We did not expect anything else from Woods but just such a welcome, but as for accepting his invitation to come to Virginia, you must understand that Virginia has helped to settle our great Western country, and that it has taken men from Virginia to make this Western country, and as such we come back to greet you here in your home State.

RESPONSE TO ADDRESS OF WELCOME.

By Colonel C. L. Watrous.

I would that my ability permitted me to respond in terms fitting our surroundings. While Lieutenant Governor Edyson and our worthy representative of the horticultural interests of Virginia have been speaking, my mind has traveled back to days of the past, and I wondered what would have happened had the shipmaster in charge of that first vessel with its freight of human beings looking for the new settlement found the Virginia coast, instead of the bleak New England headland.

It has been customary to think that there is a difference between the North and the South, between these two great parts of the country separated by geographical divisions. Perhaps there was a difference,—it was acute at one time,—but since the period of the great conflict between the opposing interests of this country, there has been a welding and a cementing process going on, gradually but firmly, until now the line of demarcation is obliterated, just as the line between the two pieces of iron which the expert smith unites in the welding process is lost sight of. The American Pomological Society is truly a national organization; in joining it, no member is ever questioned as to his sectional proclivities or national point of view. The Pomological Society is itinerant in character, it moves from one part of the country to another, it holds its meetings with as great enthusiasm in the South as in the North, in the East as in the West, and we hope, with equal benefits to all parts of the country. It is my hope that the next meeting of this great society will be held in Canada. We already have suggestions from our brethren of the North that a meeting in the heart of their fruit region would be acceptable, and should such an invitation come, we trust it will be acted favorably upon by our Executive Committee.

I need not outline the work of this Society, work which has been going on quietly and consistently for half a century. I may draw attention to the great nomenclatural problems undertaken and solved by this society. This work has been carried on for half a century, as I have stated, and it is broadening each year. Its value to the work of the fruit grower is incalculable, the opportunity is widening, and its efforts are constantly

for the upbuilding of the industry in which we are interested. From the inadequate basis on which our Society was organized, it has grown to include the commercial aspects of horticulture; in other words, it has kept pace with and has helped pomological advancement in this country. Many examples of sectional adaptation of fruit might be given, which were emphasized by the reports of this society. The American Pomological Society has bred fruits, but it has also bred men, it has created enthusiasm. The work of the Society is not purely economical, it treats of the esthetic side as well, and leaves not wholly untouched philanthropic issues.

It is delightful to us to meet with you in this country where memories of early days are fragrant, and where the region has such a picturesque and historic background. May the memory of our meeting be like the memory of the person whose life has been composed of good deeds and good actions—always fragrant.

PRESENT STATUS OF CITRUS BREEDING.

By Professor H. J. Webber, Cornell University.

Mr. Chairman, Ladies and Gentlemen:—With reference to the present status of citrus breeding, or orange and lemon breeding, as a whole I fear that I can give you but a very inadequate idea. Practically all that I can do is to discuss the experiments which I have personally had in charge until a few months ago, and therefore the few remarks which I will make will be limited to the citrus breeding work which is in progress by the Department of Agriculture at Washington. I presume that the majority of you know that the main aim of those experiments was to breed a hardy or frost-resistant variety. Time has not passed so far but that all of you remember the great freeze of the winter of 1894-95, that swept down from the North over certain sections of the South, and killed down the orange and lemon trees of Florida. Trees a foot in diameter were killed to the ground by the freeze, causing a loss of nearly \$75,000,000 in a single night. The main industry of the State was cut off. I happened to be experimenting in Florida on citrus diseases at that time and we awoke the morning after the freeze to find our entire occupation gone. There were no diseases to study. There were no trees left. In casting about, therefore, with my colleague, Mr. Swingle, to find something to do, we got the idea that what Florida needed was a hardy orange that would withstand these terrific freezes. Well, now, how could we produce a hardy orange?

The breeder will tell you that if you have a hardy variety of any kind, the probability is, that you can hybridize it or cross it with tender varie-

ties and transfer that hardiness from the hardy type to the tender and edible varieties, securing a new combination of characters. Fortunately we had such a hardy type in the common Trifoliate orange. The Trifoliate orange bears a sour, bitter, gummy fruit, which in general is worthless, but it is hardy. It has that character of hardiness or cold resistance that we want to transmit to the ordinary orange. While the two types are quite distinct and are difficult to hybridize, a number of true hybrids were finally secured. Here is a photograph that illustrates a seedling of an ordinary trifoliate orange on the right, and an ordinary sweet seedling on the left, with one of the hybrids between them. If you examine it you will see that the hybrid has leaves intermediate in size between the two parents and yet is larger than either one of them. The hybrids are of more rapid growth than either of the parental varieties. The thing we are interested in, however, is what will be produced in the case of fruit. (Speaker exhibited various photographs illustrating different hybrids.)

The fruits from these various hybrids differ considerably as would naturally be expected, and while many of them are worthless, others form fruits which are apparently of considerable value. Several of them are fully as large as the common sweet orange. As a whole they are very juicy, and are nearly seedless. The foliage of these intermediate hybrids is much larger and more vigorous than in the case of the ordinary Trifoliate orange.

Referring more in detail to some of the different hybrids which have been named, I would state that one of the first varieties to be distinguished, was named the Rusk, after Secretary Rusk, the first Secretary of Agriculture. The fruit of the Rusk is comparatively small, averaging in size about the same as the ordinary tangerine. It has a yellow pulp which is very juicy and melting, but rather too sour and bitter to eat out of hand unless taken with sugar. A comparison of the amount of juice contained in the Rusk fruit, with that from ordinary lemons shows that the Rusk produces on an average a much larger quantity of juice. This is not quite as sour as the lemon, however.

Another of these hybrids has been named the Willits, after the late Assistant Secretary Willits of the Department of Agriculture. Another the Morton, after the late Secretary Morton. Another the Colman, in honor of ex-Commissioner of Agriculture Colman, who was for a short time Secretary of Agriculture. Another has been named the Savage, in honor of Mr. Frank Savage of Eustis, Florida, in whose grove the hybrid was made.

The Willits is a comparatively small fruit, and while the first fruits developed were comparatively regular in size, the fruits at the present

time, after the trees have been bearing for several years, show a tendency to be rather irregular in outline, and many fruits show divided segments. These fruits are also nearly seedless.

The Morton, Colman and Savage are all very large fruits, fully as large as the ordinary orange, and are quite prolific bearers. All of these also are nearly seedless. The Morton and Savage are considerably alike in general appearance, differing materially only in the fact that Morton is rather rougher skinned and rather darker orange in color. They both have quite sour pulp with comparatively little of the bitter principle which is so characteristic of the Trifoliate orange. The Colman differs from the others in being a much lighter yellow color and having a surface covered with short appressed hairs similar to the Trifoliate orange. The pulp of this variety is of a rich yellow color and very sour, and I believe more bitter than any of the other varieties: however, it is scarcely, if any, more bitter than the pomelo. The foliage of these varieties is trifoliolate in general character, but some of them show a tendency to develop unifoliolate characteristics. The trees are beautiful in shape, with dense foliage, which is very dark green and semi-evergreen. These fruits are not oranges, lemons, or any other type of citrus fruits now known, and have been named *Citranges* as a general class name, so that the Rusk, Colman, Morton, etc., are different varieties of citranges. It will be noticed that this term is a combination of the first syllable of the word Citrus and the last syllable of the word Orange.

Professor Beach: May I ask the question whether your name is true, which is the male parent and which is the female parent? Is there a difference in the reciprocal hybrids?

Dr. Webber: With reference to the name of these fruits, I would state that it is not intended to indicate the parentage by the name, as the first syllable of the word is from the generic term citrus and the last from the word orange, both of them being, therefore, general terms and not referring to classes of varieties or fruits. In regard to the difference in the reciprocal hybrids I would state that we have never had a sufficient number of these fruits where the common orange was used as a mother parent, to pass judgment. Only two different seedlings have fruited where the orange was the mother parent, and both of these are somewhat different from any of the other hybrids where the Trifoliate orange was used as the mother parent. However, different varieties of the common orange were used in crossing with the Trifoliate, and this could well account for the differences in the hybrids. It is interesting to note that the experiments carried on by the speaker and his associates are not the only ones which have been undertaken in the production of hardy oranges. Mr. Normand of Marksville, Louisiana, and

Mr. Marti of Houston, Texas, have both produced hybrids where the *Trifoliata* was used as one parent in crossing with varieties of the common orange. Mr. Normand claims to have produced some oranges of very excellent quality which are also hardy. The speaker has examined a few of these oranges and some of them are certainly of excellent quality, but they are different in type from the citranges which have been produced as a result of the Government experiments. Some of Mr. Normand's hybrids resemble entirely the common orange and show no indication of hybridization with the *Trifoliata*. Only one of the fruits which I have examined shows clearly the effect of *Trifoliata* heritage, and this one would be valuable only because of its peculiar appearance, as it has very little juice and is of undesirable shape.

Very few of the hybrids produced by Mr. Marti of Houston, Texas, have come under the observation of the speaker. One of them which is a hybrid between the Satsuma orange and the *Trifoliata* is of a very peculiar shape but does not appear to possess value. In all of the experiments to produce hardiness a number of attempts have been made to use the Satsuma orange as one of the parents, as it is one of the hardiest varieties of the sweet orange which is grown at the present time. All of the crosses of this variety which have come under the speaker's observation up to the present time, have been of odd shapes and practically valueless, indicating that it is not a good parent to use in the hybridization. However, only a few such hybrids have been produced and not enough from which to draw general conclusions.

With reference to the varieties which have been produced by other experimenters, the speaker feels that he has too little knowledge to pass judgment as to their value. With reference to the value in general of these hardy orange hybrids, I would state that the matter is still doubtful. However, I feel that a very important advance has been made in the securing of these citranges. As you have seen from the examination of the photographs, the fruits are large, attractive in appearance, juicy and nearly seedless. They make a very excellent citrangeade, similar to the lemon or limeade. They make excellent pies, cakes, marmalade, preserves, etc. Indeed, they may be used in almost every case where the lemon and orange are used for culinary purposes, giving a slightly different flavor but at the same time very pleasant.

With reference to their hardiness, I would state that they can be grown successfully in South Carolina, Georgia, Alabama, Mississippi, Louisiana, and in the southern parts of Arkansas, Tennessee, Texas, Arizona and New Mexico. They can probably also be grown successfully in the regions of low altitude near the coast in Washington, Oregon and northern California. It would seem from the tests of hardiness already made that they can be successfully grown from 300 to 400 miles

north of the present orange belt of Florida. I believe fully that these fruits, which are, therefore, adapted to a new territory where no citrus fruits are now grown and where there is a lack of acid fruits will prove of very great general value even in their present condition. However, I look upon their present value as only a small part of their intrinsic value. I believe that these fruits will form the basis for a new group of citrus fruits that will be very greatly improved in the near future, and that other and better varieties will soon take their place, and that the "Golden Fruit of the South" will thus be spread and cultivated through a tremendous territory now greatly lacking in fruits of any kind.

Mr. Hartwell: Will they stand a second and third crossing and still be fertile?

Dr. Webber: There is every evidence that the hybrids should be fertile in second and later crossings, as the first generation hybrids produce some seeds. If any generation is to be sterile, it should have been the first, and while, as I have explained above, some of these fruits are nearly seedless, all of them develop a sufficient number of seeds to enable us to carry on further experiments with them. One thing of importance now is to cross these citranges again with different oranges in order to further mix up and change the heritage.

Mr. Hartwell: I did not know but what they would be mules.

Dr. Webber: As you have seen from examining the photographs, while the majority of the first generation seedlings are nearly sterile, they still develop some seeds. We were at first greatly in fear that they would not be fertile and that we would have no seeds to continue the experiments. The Department of Agriculture is growing a considerable number of seedlings from these citranges at the present time, but none of them have yet fruited, and it remains to be seen what will be produced by these seedlings. I, however, fully believe that the varieties we now have can be considered only as the beginning of what will be finally developed. Experimenters all over the country will be growing seedlings of them we trust, and soon we may expect to have much better varieties than the ones thus far secured.

Mr. Kirkpatrick: I have heard of some of these trees growing in the northern states. I think Professor Webber intends to introduce them into the banana belt of western New York.

Mr. Patten: Are the second generation seedlings crossed?

Dr. Webber: The seedlings which we have grown thus far have not been hand-pollinated and if they are crossed they have been crossed naturally by bees. Should this have been the case, so much the better. We want to secure all variation possible, either from crossing or from the natural splitting up of the hybrids. We wish to secure varieties flowering at different periods and fruits of different sizes and

quality. Again, any variation which springs up can be utilized directly by bud propagation, not requiring to be carefully bred and fixed in type as is the case in seed-propagated plants. We do not, therefore, care whether they are crossed or self-fertilized as we wish to get the greatest amount of variation.

Mr. Hartwell: It does not follow that the cross is going to be hardy.

Dr. Webber: One, of course, cannot be sure that a cross of these citranges with other tender varieties will be hardy. From a scientific standpoint you will understand that we expect a hybrid to break up in the second generation. Ordinarily speaking, it is probable that in the second generation the various characters of the two varieties crossed will segregate and that we will have certain hybrids that will be as hardy as one parent and others as tender as the other parent. It may be many years before we can get any oranges as hardy as the *Trifoliata* with the edible quality of fruit of the sweet orange. Indeed, no one can predict that this will be the case, although it is certainly within the bounds of probability.

Professor Hansen: How far north can the Trifoliate orange, which you used as the hardy parent, be grown?

Dr. Webber: The Trifoliate orange will grow as far north as Philadelphia and I have seen trees on Long Island. The Trifoliate orange is deciduous and the tree becomes fully dormant in the winter. The hybrids between the Trifoliate orange and the ordinary orange are what might be termed semi-evergreen. They retain almost all of their leaves in the extreme South where they are not subjected to any very great degree of cold. However, as we take them farther north they become more nearly deciduous and it is probable that in the northern range of their culture they will lose all of their leaves in the winter. Hardy varieties is only one of the numerous desiderata of the orange grower, and as this experimental work has turned out, the types which have thus far been produced are of little value to the Florida orange grower, and cannot be recommended for growth in the region where the ordinary orange can be grown successfully. The time will probably come when some of the varieties will be sufficiently good in quality of fruit to justify their growth in the region of the common orange. Hardiness is only one character with which the Department has been concerned in their experiments.

Another improvement which was desirable was the securing of a type between the tangerine and the pomelo, two markedly distinct groups of citrus fruits. The pomelo or grape fruit is quite sour and bitter while the tangerine is sweet, rather insipid and is characterized by having the easily removable skin, giving it the so-called "kid glove"

quality. One of the results of hybrids of these two fruits has been a new group of hybrids which we are terming "tangelos." These are hybrids which are in general about intermediate between the two parents. One hybrid which has been named the Sampson, is intermediate in size, has the easily removable skin of the tangerine and is very juicy, with a sprightly acid flavor, somewhat similar to the grape fruit but less acid. It also has the bitter principle of the grape fruit considerably reduced and appearing only as a suggestion. This variety has been distributed to various growers, but it has not been fruited in sufficient quantity so that we can determine what the market will do with it. However, the Sampson tangelo is a very fine flavored fruit and is certainly an interesting and valuable novelty.

Another problem which has been considered in connection with the experiments of the Department of Agriculture, is transferring the loose "kid glove" skin of the tangerine onto a hybrid with the quality of the common orange. We find that many people rather dislike the tangerine because it is somewhat insipid and sweet. Many would prefer a fruit having the sprightly flavor of the common orange and at the same time possessing the "kid glove" quality of the skin of the tangerine. A fruit of this kind would be of very great value. Many hybrids were made between the tangerine and common orange with the hope of securing such a combination. Unfortunately none of these hybrids have as yet given the combination desired. In all of the hybrids of this parentage which have thus far fruited there seems to be a marked tendency to resemble the mother parent. In cases where the tangerine was crossed with the common orange, used as the male parent, several interesting fruits have been produced, two of them having been named as distinct varieties, namely, the Trimble and Weshart tangerines. These fruits are hybrids of the Dancy tangerine with pollen of the Parson Brown orange, but as a matter of fact are apparently true tangerines, showing no indication of the orange parentage. The fruits, however, are quite large, considerably exceeding the ordinary tangerine, and are, at least under the conditions where the test was made, about two weeks earlier than the Dancy. While these new varieties are apparently valuable, they are not what we desired to produce. It is rather surprising to be able to state that we have secured almost the ideal type for which we were working in another way, namely, by crossing the grape fruit with pollen of the tangerine.

Mr. Patten: I wish to ask if you will not secure the character that is desired by planting the seeds of those grape fruits that you speak of?

Dr. Webber: The possibility is that if we planted seeds of the grape fruit, or of the grape fruit hybridized with the tangerine, we could not, or at least would not, expect to secure the quality desired.

Mr. Patten: You have a plain combination between the two varieties.

Dr. Webber: No, the combination is not plain. Where the tangerine and orange were crossed only the tangerine parentage showed in the hybrids so far as they have yet fruited. It is probable, however, that these were not true hybrids.

Mr. Patten: In crossing, however, you do know that you have a variation of the two varieties.

Dr. Webber: I would explain to Mr. Patten that when we cross two varieties of oranges, we are not certain that we have a true hybrid. In citrus fruits we have a complication arising which does not occur in apples and ordinary temperate zone fruits, from the fact that the orange has the faculty of developing what we call "adventive embryos." These embryos develop in the embryo sac without reference to fertilization and are thus not affected by cross pollination. They naturally resemble the mother parent, whether it is a pomelo that is used as the mother parent or a tangerine, and it is probable that in the majority of orange hybrids, where we have no indication of any parentage showing except from the female parent, that the seedlings have developed from such adventive embryos, and are thus not in any sense true hybrids. In all cases where there is evidence of true hybridization, both parents show in at least some characters.

Professor Lazenby: Are these fruits all seedless?

Dr. Webber: No, the majority of the hybrids, about which we have spoken latterly, produce plenty of seeds. With reference to the citranges, as above stated, which are crosses of the Trifoliate orange and the common orange, I would state that they are as a whole nearly seedless. However, in no case are they totally seedless, giving an average of about one seed per fruit, and in some cases, giving only one seed to four fruits. In the tangelo, above mentioned, the seeds run about ten per fruit, and in the case of hybrids of the orange and tangerine the number of seeds is about the same as in the parental varieties, averaging, I should say, about ten seeds per fruit. In regard to the seedlessness of oranges in general, I may explain that in most cases this seems to be due largely to abnormalities in the pistil, as in the case of the Navel orange.

As above stated one of the main problems which the Department has been working to solve is the production of an orange-tangerine hybrid that would have the quality of the common orange combined with the loose skin of the tangerine. No such hybrid has thus far been produced, but we have very curiously obtained about the same result in a roundabout way. A certain cross of the pomelo with the tangerine has given us a hybrid fruit which resembles an orange in flavor, size, etc., and has the "kid glove" character of the tangerine. This hybrid shows

no recognizable quality of the pomelo and from all appearances would be judged to be an orange-tangerine hybrid. This hybrid has been named the Thornton, and a limited number of trees were distributed last season.

Another line of investigation which has given us some important results, is concerned with the improvement of the lime. The lime as you are doubtless aware, has only within recent years come into prominence as a commercial fruit. When I first went to Florida, in 1892, the limes were never shipped and only a few trees were grown, the fruits being used simply for home consumption. The introduction of the lime into the North has come about through its use at soda-fountains, and limeade has now become a popular beverage. The demand for limes has increased very greatly and there is now need of standard varieties which will be known to produce a certain character of fruit. Practically all of the fruits which are shipped at the present time are from seedlings, which vary greatly in the size and appearance of the fruits produced. In the course of the Department experiments a number of limes have been fruited, some of which are apparently of excellent quality. Two of these seedlings have been named as new varieties and distributed under the names of Everglade and Palmetto. One of these seedlings produces a small round fruit of very uniform size, and the other a large fruit which also runs very uniform in size. In both cases the fruits are borne largely on the outside of the tree which is a desirable character in the lime. There is nothing very exceptional about these two varieties of the lime other than that they are simply good varieties of West Indian limes. It is probable that by an examination of the seedling lime trees through the south of Florida, one could find a number of trees just as good as these seedlings. The speaker's idea in naming these varieties was from the standpoint that a beginning must be made, and the two varieties are certainly better than the average seedlings.

One of the most important improvements which has appeared in citrus varieties recently is the seedlessness of the pomelo. Until very recently all of the varieties of pomelos were exceptionally seedy, producing commonly from 75 to 100 seeds per fruit. The so-called Marsh Seedless, which was produced about a decade ago, develops comparatively few seeds, so few indeed that a section through the center of one of these fruits will frequently show no seeds at all, although ordinarily a fruit will produce about five seeds. Other seedless types of the pomelo are appearing and it is probable that within a few years we will have a number of nearly seedless varieties.

While the improvements which have thus far been secured in citrus fruits are certainly of great importance and of great commercial value,

there is no doubt but that much yet remains to be accomplished, and the field of citrus breeding is one of the most fascinating fields of investigation of which the speaker has knowledge.

President Goodman: Is there any question you would like to ask before leaving this topic? The Department at Washington is doing wonderful work in all lines of study, investigation, research and experiment.

There is a member of the Department of Pomology at Washington whom we have all honored these many years, and whom we delight to honor, and to-day he will tell us something about originating new fruits.

NOTES ON NEW FRUITS.

By Colonel G. B. Brackett, Pomologist, U. S. Department of Agriculture.

The demand for new fruits is constantly increasing. Explorers are sent to all parts of the world in search of the best pomological products. Individual experimenters are untiring in their efforts to originate new varieties of better quality for table use and for market purposes and of types of longer keepers, hardier in tree and more immune from disease,—varieties in every way superior to any on our present long list.

There was a time when the evolution of fruits was left almost wholly to the slow process of nature unaided by man. "The mills of the gods grind slow." Systematic horticulture has been slow in reaching its present stage of development, and for many of its most valued discoveries it is indebted to the patient industry of some obscure searcher. The opportunity for the systematic evolution of desirable types of fruits is beyond computation, and when once the field is entered upon with a strong determination to work for definite objects there is no limit to the possibilities for future achievements. Formerly all fruit investigations were conducted and supported by voluntary contributors, but the field is broader now. Men are paid from public funds to investigate pomological problems both state and national. Men like Burbank, Webber, Beach, Patten, Hansen and other experimenters have just begun to work out some of the problems. We need more workers with abundant means who will devote their whole time to the attainment of the definite object of improving varieties and thereby enriching the industry by quality, quantity and value.

Since the last session of this society about 5,000 specimens of fruits have been received at the office of the Pomologist, U. S. Department of Agriculture, for examination and identification. Of these about 220 have been new or little known varieties, and a surprisingly large number are found to be promising, and have been recommended for further

trial and investigation. About 90 per cent. of these promising candidates for public favor have been chance seedlings, leaving only ten per cent. to the credit of systematic breeders and hybridizers. All honor to the individual experimenters who have produced a large share of this tenth part unaided by state or national funds! They have pursued with untiring efforts their work, without hope of reward save the benefits bestowed on future generations of mankind. State Experiment Stations, with few exceptions, I am sorry to say, have added but little to this list of new varieties. They have only touched on the horizon of horticultural possibilities. Their attention seems to have been turned in other directions. It is hoped that ere long they will awake to the realization of the possibilities lying before them along this line.

STRAWBERRIES.

The strawberry has been receiving more attention of late than formerly, and many new and valuable varieties have been originated and introduced, among which a few are worthy of special mention.

MILLIONAIRE

H. Jerolman, Hilton, New Jersey. This promising new variety of strawberry, which is one of the most noteworthy of those that have come under my personal observation, is the result of crossing Mary with Hilton Gem. The plant is sturdy and upright, the foliage large and massive. When seen from a distance on the grounds of the originator the plants stood out very conspicuous among many other varieties. It is one of the most robust, vigorous growers among strawberries, attaining a height of from 12 to 15 inches, and having dark, glossy green foliage. The plants grow larger each succeeding year, the grower states, which would indicate there is no tendency of the plant to revert, nor of the fruit to get smaller in size.

Description—Form conical; size large; stem stout; very hairy; calyx large, tenacious, dark green; color of berry bright crimson; seeds irregular, numerous, small; flesh salmon red, white core line; juicy, subacid, pleasant. Quality good to very good.

To Mr. Arthur T. Goldsborough of Wesley Heights, District of Columbia, belongs the unique honor of originating the largest strawberry ever recorded. One specimen received at the office of Pomology on June 5th, 1905, weighed $4\frac{3}{4}$ ounces and measured $3\frac{1}{4}$ inches by 3 11-16 inches. He also grew the largest berries exhibited this season at the Jamestown Exposition, and for the exhibit he was awarded first prize.

UITLANDER.

Arthur T. Goldsborough, 1906. A cross of Heart Flush with Strideway. One of the most promising berries of early June. Specimens won favor at the Jamestown Exposition, and this berry is also a candidate for the Wilder medal.

Description — Form roundish; size large; stem medium stout, hairy; surface medium glossy; color crimson; seeds irregular; flesh pink, very light next the core; texture medium tender, meaty; moderately juicy; shipping quality fair; flavor subacid, rich; quality good to very good.

ST. LOUIS PRIZE.

Arthur T. Goldsborough, 1903. A cross of Laxton Commander with Heart Flush. A prize winner at the St. Louis Exposition.

TAFT.

Originated by A. T. Goldsborough, 1906. A cross of Goldsborough with Royal Straight Flush.

Description — Form roundish; size large; stem medium stout, hairy; surface glossy; color crimson; seeds irregular, depression medium; flesh crimson, whitish, or red at core, white core line; texture melting; core hollow; firmness medium; juicy; shipping quality fair; flavor subacid, pleasant; quality good to very good.

Some late bearing strawberries have recently been examined and are worthy of mention. Mr. Samuel Cooper of Delevan, New York, in walking through his strawberry bed in 1898 discovered a mother plant with 16 runners, white with bloom. It was a late bloomer and he thought he had discovered a plant of value. He had been hitherto trying to secure an everbearing variety by crosses on *Fragaria vesca* without success. Here was a true *F. virginiana*, for the ancestor of the berry was Bismarck, a variety from Arkansas. He isolated the everbearing plant and propagated from it. The next lot possessed the sterling everbearing habit. By a moment's careful observation he had accomplished more than he had hitherto been able to do by most laborious work. The plant was self fertile and he named the new strawberry Pan American, because it had no foreign blood in it. This brings to mind the fact that all experiments in this country to secure an everbearing berry through the *F. vesca* varieties have been unsuccessful, but as soon as our experimenters turned to *F. virginiana*, they succeeded in producing fall varieties. Out of a thousand seedlings from Pan American Mr. Cooper retained but one, which he named Autumn. The berry is of good size and dark red color; it is a pistillate of true everbearing

habit, but differs from the parent in more vigorous growth and an abundance of runners. For commercial plantings every fifth row should be of Pan American. The Pan American is allowed to fruit but once a year, while the Autumn is permitted to bear fruit both fall and spring. The Autumn yields about 12 ounces of berries per stalk. Out of 1,300 plants only four failed to bear, Mr. Cooper informs me, and judging by this, the type does not readily revert. On September 21st of this year one plant of the Autumn variety was received that had on it three large trusses heavily laden with berries, that if fully grown would probably have filled a quart measure. It has been Mr. Cooper's custom to market the fruit of the Autumn and the Pan American in Buffalo for several years past, and he has received good prices until the early snows of October. The possibilities of supplying the market with ripe strawberries from July until October is an Aladdin's dream likely soon to be realized.

We have also just examined a number of specimens of everbearing strawberries grown by that strawberry specialist, Mr. Henry Rockhill of Conrad, Iowa. He also failed to secure a hybrid with *F. vesca*, but *F. virginiana* brought results. By crossing Pan American with Senator Dunlap, he secured a plant with better crown; and Pan American with Brandywine gave a choicer quality of fruit. He has a number of other crosses producing very sweet flavored strawberries of excellent quality.

There are many other promising candidates for favor that are highly recommended, but of which I have only the history, and have not seen specimens of the fruit. Among these are the Dixon from Staten Island, New York. Kevitt's Wonder, introduced by T. C. Kevitt, strawberry specialist, Athenia, New Jersey; the Fendall, originated by Arthur C. Fendall, Clerk of Circuit Court, Towson, Baltimore County, Maryland; and those noted specimen berries grown at Judsonia, Arkansas, the Jim Dumas and the "H. H.," for the latter of which the Fruit Growers' Association of Judsonia, Arkansas, paid \$1,500, and which promises to be such an excellent shipper. Credit for the origination of the Arkansas varieties is due to the skill of Louis Hubach of Judsonia.

SEEDLING APPLES.

On October the 5th, 1906, we received from Mr. Paul Evans, director of the Experiment Station at Mountain Grove, Missouri, a remarkable collection of over 50 varieties of seedlings, some of which were found to be of excellent quality and very promising. Of the origin of these seedlings Mr. Evans writes: "There is very little known as to the exact origin of practically all this group of apples. There is a section of country between the two main lands of the Frisco railroad where there

is scarcely anything in the apple line but seedlings. There are several old seedling orchards that were planted long before the War, and then a second generation of seedlings grown from seed produced in these old seedling orchards. As yet I have not been able to get very much information about these old seedling orchards—that is, about who planted them, and where the seed came from.”

SEEDLING NO. 17.

This apple originated from seed brought from Jefferson County, Missouri, to Texas County, Missouri, in 1855. Original tree now dead.

Description—Form oblate; size large; surface smooth except the erupted dots; color greenish yellow; dots numerous; cavity regular; stem medium stout; basin regular; calyx segments medium, converging, reflexed at tip; eye medium, closed; core oblate, clasping; seeds plump; flesh yellowish; flavor subacid, pleasant; quality good to very good; season autumn.

SEEDLING NO. 21.

This apple originated on what is known as the old Barnum orchard in Texas County, Missouri. The original trees are now all dead, but there are sprouts from them in that neighborhood that were planted before the War.

Description—Form roundish; size medium; surface smooth; color yellow; dots numerous; cavity regular; stem stout; basin regular; calyx segments medium, converging or erect; eye medium; core oval; seeds destroyed by codling moth; flesh yellow; flavor subacid; quality good to very good; season autumn.

SEEDLING NO. 23.

This apple is an unknown chance seedling. Origin Texas County, Missouri.

Description—Form oblate; size large; surface smooth except the ribbing; color greenish yellow; dots yellow or brown; cavity regular; stem medium, slender; basin regular; calyx segments medium, erect or reflexed; eye medium, open; core oblate, clasping; seeds plump; flesh yellowish; flavor subacid; quality good to very good; season autumn.

SEEDLING NO. 25.

This apple originated in Texas County. Original tree from seeds that were produced on an old seedling orchard. The particular seedling from which the seed was secured is not known. Seed was planted about ten years ago and the tree is now in a thrifty condition.

Description—Form roundish; size medium; surface smooth except

the ribbing; color yellow; dots scattered; cavity regular; stem slender; basin regular; calyx narrow and converging; eye small; core oblate; seeds plump; flesh yellow; flavor subacid; quality good to very good; season autumn.

SEEDLING NO. 26.

This original tree in seedling orchard was planted about 1850. The original tree is now in a fairly good state of preservation, and measures at shoulder height seven feet in circumference.

Description—Form roundish; size large; surface smooth; color yellow; dots numerous, russet; cavity regular; stem medium stout; basin regular; calyx segments small, reflexed; eye large, open; core oblate, clasping; seeds plump or imperfect; flesh yellowish; flavor subacid; quality good to very good; season autumn.

SEEDLING NO. 27.

This apple is of the same origin as No. 26. Original tree is now in perfect state of preservation. It is six feet in circumference, shoulder high, and has a spread of forty feet. It bears nearly every year a full crop of clean fruit that is very uniform in size.

Description—Form conical; size large; surface smooth; color yellow; dots minute; cavity regular; stem medium stout; basin regular; calyx segments small; eye medium; core oblate; seeds medium; flesh yellow; flavor subacid; quality good to very good; season autumn.

SEEDLING NO. 31.

This apple is a chance seedling that came up in a fence corner on a farm in Texas County, Missouri, seven years ago. This is its first crop (1906), two apples.

Description—Form roundish; size large; surface moderately smooth; color yellow; dots prominent; cavity regular; stem medium slender; basin regular; calyx segments medium; eye large; core oval, conic, clasping; seeds plump; flesh yellowish; flavor subacid; quality good to very good; season autumn.

SEEDLING NO. 32.

This apple is supposed to be a chance seedling, but there is no history as to its origin. Original tree is on an old farm in north Texas County.

Description—Form oblate; size large; surface smooth except the ribbing; color yellow; dots numerous; cavity regular; stem medium stout; basin regular; calyx segments medium; eye small, closed; core oblate, conic, clasping; seeds plump; flesh white, deeply stained with red; flavor subacid; quality good to very good; season autumn.

SEEDLING NO. 33.

This apple grew only a few feet from No. 32. Supposed to be from the same seed, as there was originally a seedling orchard at this place.

Description—Form oblate; size large; surface smooth except the ribbing; color yellow with bronzed blush; dots numerous; cavity regular; stem medium stout; basin regular; calyx segments small; eye medium; core oblate, clasping; seeds plump; flesh yellow; flavor sweet, rich; quality good to very good; season autumn.

SEEDLING NO. 42.

This apple is supposed to be a chance seedling, but the tree is now forty or fifty years old, and nothing definite can be learned as to its exact origin. It is a good bearer, and keeps exceedingly well for a fall apple.

Description—Form oblate: size large; surface moderately smooth; color yellow with bronzed blush on exposed side; dots numerous; cavity regular; stem slender; basin regular; calyx segments medium; eye medium; core conical, clasping; seeds plump; flesh yellow; flavor subacid; quality good to very good; season autumn.

SEEDLING NO. 46.

This original apple tree is now ten years old. Locally known as the Striped Seedling.

Description—Form conical; size medium; surface smooth; color yellow; dots scattered; cavity regular; stem slender; basin regular; calyx segments medium; eye medium; core conical, clasping; seeds plump; flesh yellowish; flavor subacid, rather rich; quality good to very good; season autumn.

SEEDLING NO. 52.

This apple is a chance seedling that came up in the woods about a mile from the Experiment Station. I know nothing of its origin further than this, and this is the first fruit that I have seen.

Description—Form roundish; size medium; surface smooth except the slight ribbing; color greenish yellow; dots small; cavity regular; stem medium stout; basin regular; calyx segments medium; eye medium; core oval, clasping; seeds plump; flesh yellowish; flavor subacid; quality good to very good; season autumn.

SEEDLING NO. 53.

This chance seedling apple came up in the woods about a quarter of a mile from the Experiment Station. This is its first fruit.

Description—Form roundish; size medium; surface smooth except

the slight ribbing; color greenish yellow; dots small, russet; cavity regular; stem slender; basin regular; calyx segments small; eye large; core oval, medium; seeds plump; flesh yellowish; flavor subacid; quality good to very good; season autumn.

SEEDLING APPLE, at present called "BOB MEIERS."

Grown by Joseph A. Burton, Orleans, Indiana. The apple is a green skinned late variety. The original tree is 20 years old, and was found on the farm of Polk Beavers, Tunnelton, Indiana. The fruit is firm and juicy and of good flavor. The fruits grow singly, and have a closed eye, which makes them fairly free from worms. For a family orchard the fruit is well worth propagating, but for cold storage the apple is not of good color.

Description—Form roundish; size medium; surface smooth except the erupted dots; color yellowish green; dots small, russet; cavity regular; stem medium slender; basin regular; calyx segments medium; eye medium; core conical, clasping; seeds plump; flesh yellow; flavor subacid; quality good to very good; season winter.

FLETCHER.

This apple was found by Calvin Fletcher, one of Indiana's pioneer horticulturists, in a pasture field in Owen County. It was brought to the attention of the Indiana Horticultural Society about 1898. Apples then exhibited were rated at \$2.00 per bushel, or double the price of commercial apples on the Indiana market at that time. The tree is at present being perpetuated by Mr. J. A. Burton of Orleans, Indiana, who finds on the young trees the fruit has a tendency to run to small sizes, and that it is very subject to attacks of curculio.

Description—Form oblate; size medium; surface smooth; color yellow; dots numerous; cavity regular; stem stout; basin regular; calyx segments medium, converging; eye medium; core oblate, clasping; seeds plump; flesh yellow, deeply stained next to skin; flavor subacid; quality good to very good; season winter.

HAMES SEEDLING.

This promising seedling apple originated in a grove in western North Carolina, and was first brought to public attention by the J. V. Lindley Company. The apple is famed for its beauty and good bearing quality.

Description—Form oblate; size large; surface slightly ribbed; color rich yellow with marblings of green and russet; dots variable; cavity triangular; stem medium stout; basin regular; calyx segments medium;

eye large; core oblate, clasping; seeds plump; flesh yellow; flavor mild, subacid; quality good to very good; season autumn.

SEEDLING.

The tree came up from the pomace bed of a cider mill, and bore fruit when five or six years old. The specimens were sent by Nathan Ratliff, Clayton, Indiana. The apple is a winter apple of good quality. The original tree grew in the southwest part of Hendrix County, Indiana.

Description—Form roundish; size above medium; surface smooth; color yellow, a little mixed with red; dots numerous, russet; cavity, regular; stem medium slender; basin regular; calyx segments small; eye medium; core roundish, clasping; seeds plump; flesh yellow or yellowish; flavor subacid; quality good to very good; season winter.

GEIGER.

This promising apple is grown by Henry A. Yeager of Princeton, Indiana. It was brought to Indiana in 1837, and was supposed to be a seedling. It keeps fresh and sound till the 20th of July. It is stated that in quality it can not be beaten by any apple at any season of the year. The tree is claimed to be as hardy as a wild crab tree, bears every year, and is free from blemish. It is claimed that the apple does not lose its flavor when spring comes, and that it is unsurpassed for fine flavor and excellent keeping qualities.

Description—Form oblong; size large; surface undulating; color yellow, washed with mixed red; dots numerous; cavity regular; stem slender; basin regular; calyx segments medium; eye medium large; core conical, clasping; seeds plump; flesh yellowish; flavor subacid, rather rich; quality good to very good; season winter.

SEEDLING.

This apple, grown near Jackson, Ohio, was brought to my attention by W. G. Johnson, Editor of the American Agriculturist, New York City. He reports that the tree is about 12 years old, and is a profuse bearer of regular crops of fruit. The tree bore 15 bushels last season, and the fruit sold at a fancy price.

Description—Form oblong; size large; surface undulating, pimply; color yellow, washed over entire surface with dark crimson; dots numerous, reddish russet; cavity regular; stem not present, but apparently very slender; basin regular; calyx segments small; eye large; core roundish, clasping; seeds plump; flesh inside of core line yellow, outside deeply stained; flavor subacid; quality good; season early winter.

SEEDLING.

Grown by J. A. Guilliams, Roachdale, Indiana. This apple has been grown since the early thirties in Putnam County, Indiana, 12 miles north of Greencastle. The tree is a regular bearer of fine red apples. The tree is a strong upright grower, said to be much larger and sturdier than the Ben Davis tree.

Description—Form conical; size above medium; surface smooth except for a slight ribbing; color red; dots numerous; cavity regular; stem slender; basin regular; calyx segments medium; eye medium; core conical, clasping; seeds plump; flesh yellowish, stained; flavor subacid; quality good to very good; season November to January.

SEEDLING.

This apple is grown by R. M. Ragan, Greencastle, Indiana. About 25 years ago he said he noticed this fruit near a cider mill on his farm, and finding the tree of smooth growth and pleasing appearance he moved it to his nursery and gave it careful attention. He reports it a promising yellow variety.

Description—Form oblate; size medium; surface smooth except an occasional russet knob; color yellow with blush on its exposed side; dots small; cavity regular; stem slender; basin regular; calyx segments medium; eye medium; core conical, clasping; seeds plump; skin medium thick, tenacious; flesh yellowish, stained; flavor subacid; quality good to very good; season autumn.

SEEDLING.

This apple was grown by Herman Trichler of Brookville, Indiana. The tree came up in an abandoned field. It proved to be a strong grower and a good annual bearer. The fruit is excellent for culinary purposes. The original tree is now ten years old.

Description—Form roundish; size above medium; surface smooth except a few russet knobs; color yellow; dots numerous, russet; cavity regular; stem slender; basin regular; calyx segments narrow; eye small; core oval; seeds plump; flesh yellowish, stained red; flavor subacid, sprightly; quality good to very good; season winter.

HACKWORTH.

This apple was brought to my attention by Mr. T. W. Dennington, Lavonia, Georgia, who controls the stock. It is a candidate for popular favor. Its season is winter and it is said to be a fine keeper.

Specimens examined were market ripe January 18th, 1907. From the original orchard 2,000 bushels of the variety were marketed in the year of 1906.

Description—Form oblate; size large; surface smooth except the ribbing; color pale yellow, lightly washed with mixed red; dots scattered, variable; cavity regular; stem medium stout; basin regular; calyx segments very short; eye large; core oval, conic, medium; seeds plump; flesh yellowish; flavor subacid; quality good to very good; season winter.

HUSBAND.

This is a very promising variety grown by Joseph Husband of Chester, Illinois, from seed of Grimes Golden, supposed to have been pollenized by Mammoth Black Twig or Wine Sap, as both of these varieties were grown near the Grimes Golden. The tree is hardy and very productive. First premium was awarded to specimens of this apple as the best new variety at the Illinois Horticultural Society meeting, December 26th, 1906.

Description—Form roundish; size large; surface smooth; color yellow, washed with mixed red; dots prominent russet; cavity regular; stem medium; basin regular; calyx segments medium; eye small, closed; core oval, clasping; seeds plump; flesh yellow; flavor subacid; quality good to very good; season December to April.

SEEDLING.

This apple was grown by Paul Rose, South Frankfort, Michigan. It was selected from a number of seedlings grown by a colored man named Albert Richardson. The tree is a heavy bearer of apples of good quality. Mr. Rose considers this a good variety for selling in fancy box packages for winter use. It would be a fall apple in the South.

Description—Form roundish; size medium; surface smooth, glossy; color whitish yellow, lightly washed with mixed red; dots small, russet; cavity regular; stem medium slender; basin regular; calyx segments small; eye small, closed; core oblate; seeds plump; flesh whitish; flavor subacid, pleasant; quality good to very good; season early winter.

CITRUS FRUITS.

ELLEN POMELO.

This pomelo is a seedling originated at the home of E. N. Reasoner, Royal Palm Nurseries, Oneco, Florida. The seed was from some local fruit of exceptional quality. Mr. Reasoner says he considers the fruit the finest he has ever eaten, and he proposes to propagate the variety

extensively. The fruit hangs on the tree very late. He named it Ellen in honor of his mother.

Description—Form oblate; size large; surface smooth; color lemon yellow; peel tenacious, aromatic; tissue thin; flavor tart; seeds numerous, plump, bitter.

DRAKE ORANGE.

This variety of orange is a bud variation taken from the orange grove of Tustin P. Drake, Drake Point, Yalaha, Florida, about seven years ago. It is said to be an especially prolific bearer of fruit of fine quality, the trees being loaded in consecutive seasons. The future of this fruit is very promising.

Description—Size large; calyx set in corrugated cavity; surface undulating, pitted; color dark orange yellow; oil cells numerous; weight heavy; peel tenacious, aromatic in taste; flesh yellowish, translucent; texture medium tender; flavor pleasant, no bitterness; seeds plump, size medium.

GRAPES.

DELIUS.

This is one of the most valuable and interesting new fruits that has recently been brought to our attention. Mr. Delius the originator in effect writes: It came from the seed of the Flower grape, the pollen being furnished by the White Scuppernong, hence the purple color. Being a close observer, I detected a difference in the leaf from other seedlings. I planted it in a layer bed to watch results, and to my surprise it bore a few berries in the layer bed. I never saw a Vulpina bear fruit so young. I liked the flavor of the berry. The vine was bushlike in form. I layered from the seedling a good many plants and planted some in the vineyard to aid in pollinating other vines. The fruit of this grape hangs on well, grows in small bunches and can be shipped a long distance. It is good to eat from the hand, and makes a good flavored wine. It is very prolific and a great improvement on the Flower grape.

DISCUSSION.

Mr. Macoun: This is a subject which interests Canadians very much—the origination of those fruits—and I would like to say a word or two on what we are trying to do in Canada in that regard. There is no country in the world, I think, in which the origination of new fruits is of as much importance as in the Dominion of Canada. As I said yesterday, we have an immense territory of country which is capable of producing the best apples, plums, cherries and peaches to supply the world

for all the years to come. Well, we have an immense territory north of the States of North Dakota and Montana capable of holding about fifty million people, I should say, stretching up almost to the North Pole, where we are very desirous of growing those fruits that can be gotten in that country. We are working now at stocks on our Experiment Farm to get fruits which will be suitable for that country—that is, tree fruits—because the best bush fruits grow right up to the Arctic circle, there is no trouble about them. Dr. Saunders, our director, for about nineteen years now has had in view the production of hardy apples suitable for the prairie provinces, and I must say his results are exceedingly promising. I brought with me a small collection which you will see in the Canadian exhibit, some of Dr. Saunders' crosses with the mother crab, the *Pyrus baccata*, which occurs very far north. In the first generation of crosses there were produced varieties equal in size to the Transcendent Crab, and some larger. He has been able, on about 300 stations in the Northwest, at elevations reaching about 1,700 feet, to grow these trees with perfect hardiness, not a tree having been injured all through that country. We are hoping now from the second generation of crosses to have a race of apples in the Canadian Northwest which will be large enough to meet the wants of the people of the present time, and which will be the foundation of a Canadian race of apples suitable for that great northern prairie district.

Mr. Patten: I would say in reference to Colonel Brackett's remarks about the influence of parentage, that my experience in cross breeding, has now covered several years with the apple, is that, so far as I am able to judge, the pollenizing parent has very much more to do with the result in the tree and in the coloring of the fruit—decidedly in the coloring of the fruit—and also in the form of the tree, than has the female parent. I have so many definite crosses under observation that I feel very confident on this point, that we will discover that in the crossing of the apple the pollenizing parent has much the greater influence. This is also true in reference to the development of the tree as well. In crossing the Siberian with the common apple I have been surprised at the enormous size the hybrid has attained, springing from the seed of the little old cherry crab, or yellow crab that was first introduced into this country. I have a tree in mind that I planted,—in this case simply a selection, for it is not natural cross fertilization alone that will produce this result—a tree now standing on my grounds and probably 25 years old which was a seedling of the two-year-old cherry crab. Those cherry crab trees were quite small sized, but this tree is now nineteen to twenty inches in diameter, more than forty feet in the extent of its branches and about twenty-five feet in height, and still growing vigorously. So we do not yet know but very

little about the influence of the cross breeding of the northern and southern types of the apple so far as the tree is concerned, but certainly the development so far may prove that we can make very great progress not only in the hardiness of the tree, but in vigor as well.

Mr. Hartwell: Speaking of the pollenizing of crabs, I have a tree that bore this kind of fruit (indicating), that is very plainly the Duchess in its appearance, but it is from Snow seedlings. I understood Mr. Patten crossed with the pollen of the Duchess.

President Goodman: After such a positive statement as Brother Patten has made to us, I am surprised that Brother Hansen could keep still. I am going to call on him.

Professor Hansen: I was just about to get up to speak in regard to the predominant influence of the male parent in influencing the fruit. Some years ago I used the wild Northwestern plum, *Prunus Americana*, a native of the prairie Northwest, as a female parent in a cross with *Prunus Simoni*, the apricot plum of China, as a male parent. I had about twenty seedlings of that kind. At the present time the tree is a perfect giant in size, it excels in the rapidity of growth any tree I know of in the plum line. Now, as to the fruit, eight or ten seedlings have borne fruit and the Simoni is predominant in every respect in the character of the fruit, the seed, the color and the firmness of the flesh, and the taste. Some of the plums are an inch and a half in diameter, and remarkably like the Simoni. It is simply another instance of the fact which may or may not be a law—I do not know about that—that the female parent is sometimes perfectly prepotent in stamping the character of its fruit upon that of the seedling.

Professor Beach: It seems to me this would be an opportune time to call attention to the exhibit by Mr. Patten of the seedlings which he has brought from his experiment grounds at Charles City, Iowa, and displayed on one of the tables at the other end of the room. Mr. Patten has the distinction of living in a location that is called the coldest location in the State of Iowa. The weather record will bear out that assertion, for the thermometer makes the lowest records in Charles City of any place in the State of Iowa. He therefore has an excellent opportunity for getting rid of undesirable things by a process of natural selection. When it comes to the question of the degree of hardiness of varieties of apples, Baldwin and Rhode Island Greening have time and time again been swept out of existence in eastern and central Iowa by the severe climatic conditions that prevail there. It is nearly 40 years since Mr. Patten began to realize that the people of the upper Mississippi Valley and of the Northwest needed to develop right there on the ground the apple which they were to grow. He started out with that idea in view, and one of the first varieties which he produced

is now called the Patten's Greening. Specimens of that are shown on the table. The original tree I had the pleasure of seeing two weeks ago loaded with fruit, hardy, vigorous and productive indeed, under those conditions which I have described. Mr. Patten has raised with the production of the Patten's Greening, a variety which by the way is esteemed more highly in Minnesota than it is in Iowa, a variety that is permanently adapted to the region north of Central Iowa.

He has been an indefatigable worker along the line of breeding apple seedlings, and also he has done something with other fruits. I have had the privilege at different times of going through his seedling orchards, and two weeks ago I went through them again. Last summer I had the privilege of visiting Luther Burbank and going through his orchard and experiment ground, and I say to you that I believe Mr. Patten is doing more for the orchard industry of the Upper Mississippi Valley than Luther Burbank is doing for the orchard industries of California and Oregon. (Applause). And I do not yield to anybody in appreciation of the high character of work which Luther Burbank is doing; he has been doing a great work; but I wish to call your attention to that fine display of seedlings of Mr. Patten, and I believe that we should honor him for the unselfish and persistent work that he has put into it.

President Goodman: These seedlings, Professor Beach, I understand, are all seedlings of his own breeding?

— Professor Beach: Yes.

President Goodman: I do not want the Society to forget that they are not merely a lot of chance seedlings, but seedlings of Mr. Patten's own breeding. Mr. Patten is on the program and we shall have his paper tomorrow or some time later. The Secretary has a report to present.

Secretary Craig: I was exceedingly glad to hear what Professor Beach had to say of Mr. Patten. I do not think it is our function to come here and glorify the work of one man, but I think it is the business of the Pomological Society to recognize worthy work in any department, and I have known Mr. Patten's work for 20 years, and I have known that he has made stable, conservative progress, and that his work will continue long after him.

The Secretary has a number of papers which have been sent him by members who are not able to be present. As a rule, we are not reading the papers of those who are not present, but here is one on a region which you have heard a great deal about, and which you will no doubt be interested in, therefore I shall occupy a few moments of time in reading it.

FEATURES OF FRUIT GROWING IN HOOD RIVER, OREGON.

By C. I. Lewis, Professor of Horticulture, Corvallis, Oregon.

One of the grandest trips in this world is the journey of sixty-six miles, by either boat or railroad, from Portland to Hood River. One of the most attractive destinations to a trip is this same Hood River. The term "Hood River" is a rather broad one, including a flourishing town of about five thousand inhabitants, and a valley twenty miles in length by one-half to two miles in breadth, which is divided into the upper and lower valleys. Here on the eastern slope of the Cascades Nature has been kind to Hood River, giving her a long sunny growing season and a soil rich in the elements necessary to produce the finest fruit and of a mechanical nature easy to cultivate.

From the station nothing is seen of Hood River Valley, the town being situated on the bluff of the river. A climb of a few hundred feet brings one to a view not easy to forget. In the distance, twenty-six miles away, looms up that prince of mountains, Hood. Before you is a fertile valley, dotted with homes and orchards, with here and there clumps of fir. Through the center of the valley flows the Hood River. The whole valley is like a bowl, being entirely closed in. If you about-face, you see the beautiful town nestled at your feet, and further on rolls the noble Columbia. In the distance rise the mountains on the Washington side, and the whole view is crowned by Mt. Adams, a snow-capped peak twelve thousand feet in height. If the practical horticulturist can find the esthetic of use in inspiring him to the highest pinnacle of success, then Hood River is doubly blessed.

The general appearance of the valley indicates that its growth is recent; for although it has the largest contiguous orchard region in the world, still much of the six thousand acres of orchard is very young, and shows that development has been rapid.

Fifteen years ago Hood River was a quiet farming community. About this time some splendid apples from a few orchards in the valley began to attract attention, and about 1897 the influx of settlers was strong. At this time fine uncleared land could be purchased for \$10 per acre. What a contrast to-day, with uncleared land \$300 to \$400, and young orchards at \$1,000. One of the greatest factors in Hood River's development is the noted horticulturist, E. L. Smith, who did much to advertise the resources of the valley. In 1902 another epoch was reached, when the Apple Growers' Union was formed, and soon E. H. Shepard became the guiding spirit, and has proved himself to be a wonderful manager, procuring for Hood River the highest prices for its fruit. A large share of the reputation of Hood River the past few years is due to the efforts of this man.

In studying a fruit region it is always interesting to note the character of its people. This valley has drawn men from the four corners of the earth and from a great variety of callings. In fact, the farmer represents a very small percentage. The majority of the growers are men of considerable business training and executive ability. There is a large sprinkling of college graduates among them. They have made mistakes, of course. They planted fifty varieties of apples in the same orchard. They set their trees too close. But they have been correcting these errors, and very few orchards now grow more than two commercial varieties. The Yellow Newtown and the Spitzenberg are the favorites, although many other varieties grow to perfection.

These people have come to Hood River with one common aim—to grow the best fruit in the world and to grow it constantly better. Their union has been a tower of strength in aiding to accomplish this. Their loyalty to it is admirable. No one breathes a word against the valley. They have one common interest and uphold it.

Aside from this loyalty, there are four factors that contribute to the reputation of Hood River. First, they grow the fruit to the best of their ability. Cultivation, thinning and spraying are carried to the highest degree of perfection. Second, having grown a Number One product, they strain every nerve to pack it in the best way possible. Their system of not allowing any man to pack his own fruit has aided them greatly to reach their high degree of attainment. Third, having grown and packed a Number One product, they know themselves that they have something good. They are sometimes called "blowers," but having good cause we can forgive them, for they always can show the product. Fourth, knowing themselves that they have something good, they let other people know it. They advertise, and do it as thoroughly as a manufacturer or patent medicine firm would do it. The result of all this is that they grow an apple unexcelled in color and size and intrinsic qualities, and place it on any table in as good condition as that in which it was picked, thousands of miles away in Hood River. They have done this at a tremendous cost, but their returns are still more astounding.

One lesson I wish to draw before concluding. There are in Hood River about six thousand acres devoted to fruit growing. This land is divided among over four hundred orchardists, cutting the size of the average orchard down to about fifteen acres, thus allowing the owner to give it the best of care and not dissipate his energies on hundreds of acres, bringing small returns.

Hood River has not been done justice in this article but I trust that opportunity will allow you to visit the spot, for it is worth a long journey.

Professor VanDeman: I have no doubt that there are a number here who have been to Hood River, and I am very happy to say that I am one of that number. I have traveled the Hood River country all over from side to side of that valley, it being about five miles wide to my positive knowledge, and about twenty miles long. I have been way beyond civilization, up in the wilds there fishing, and I know the entire extent of the valley; and I will say the Hood River Valley from the picturesque standpoint is simply beautiful. I remember having stood over amongst the mountains, about two or three miles from the edge of the moraines that descend into the Columbia River, where facing us on the north stood Mount Adams with its great snowy peak piercing the sky, and in the other direction stood Mount Hood, and having looked down upon orchards, orchards, orchards in every direction. They are very small orchards, as Professor Lewis has very truthfully said,—I think the largest orchard there did not exceed about seventy-five or eighty acres, and that was held by a company,—but they are nearly all individual holdings, and the people there are, as Professor Lewis said, thoroughly united, not only as to the means by which they grow the fruit, but in their gathering and in their selling, and the Hood River apples are known the country over. This year they have received \$3.25 per box of fifty pounds for their best grade of apples, and I think the lowest grade has brought a little above \$1.50 per box,—and this \$3.25 per box means \$9.75 per barrel there at the station. Those apples cost them just 50 cents per box to cultivate and spray and even pick and pack, so they told me at Hood River, so that you can very easily calculate the net returns for the use of the land and the capital invested in trees and labor.

Now, Hood River is not the only place on the Pacific Coast that can do this thing. The Yakima Valley in Washington and the Wenatchee Valley in Washington, both of which are on the east side of the Cascade Range, are fully as good, I think, as Hood River; they have not organized and they are not quite up to the Hood River people in methods of culture, but it is simply marvelous what those people are doing out there, and I think every word Professor Lewis said is tenable and thoroughly truthful.

A Member: Do they irrigate?

Prof. VanDeman: They irrigate some,—not the orchards, however,—they irrigate the strawberries, but there is very little irrigation of the apple orchards.

Professor Close: Professor VanDeman has told us a pretty good fish story about prices that may be obtained for apples in the West, but surprising as it may seem, we can beat that in the East, and we have done it this year. Apples grown in Delaware, of the 1906 crop, sold

this year in New York City for \$3.75 a forty-pound box, which would be \$11.25 a barrel. We can do just as well in Maryland.

Professor Hedrick: I have been up to the top of Mount Hood and Mount Adams, and have seen these great orchards from that standpoint. I want to make one point from Mr. Lewis's paper, and Mr. VanDeman's talk, and from other reports that you have had from the Hood River fruit growers, we get the impression that they grow apples without any considerable effort. I will not say that possibly the last speaker gave that impression altogether; but in regard to one respect, namely, insects and fungous diseases, this is not true. After having spent two years in Oregon, and having been a great many times in the Hood River Valley, I know of no place where they have to fight the codling moth to the degree that they must fight it there. The tree must be covered with some arsenate from the beginning of the crop until the end of the crop and the same is true with diseases,—they must fight diseases from start to finish.

Professor VanDeman: The principal thing is, they fight them, that is the way they win their battle.

Mr. Stark: I want Missouri to be heard from. Messrs. Newhall & Son of South Water Street, Chicago, packed crates of apples in Missouri last fall, and early this fall they sold a lot at \$10 per barrel.

The President then announced the following committees:

On Wilder Medals—Professor S. A. Beach, Mr. Henry Augustine and Professor C. P. Close.

On Credentials—Professor W. R. Lazenby and Messrs. J. Van Lindley and E. W. Kirkpatrick.

On Auditing—Mr. C. H. Dutcher, Professor R. S. McIntosh and Mr. S. W. Moore.

On Resolutions—Messrs. A. L. Quaintance, A. McNeill and Professor Albert Dickens.

On Membership—Messrs. W. T. Macoun, Orlando Harrison and H. C. Irish.

Mr. Babcock, on behalf of the local committee, announced that arrangements would be made for a visit to the Garrett Wine Cellars, and to the region where the Scuppernong grape is grown.

President Goodman: I am going to appoint our Treasurer to make any definite arrangement that may be necessary so that there will be no clash in interests. The Society will stand adjourned until 9 o'clock tomorrow morning and we will meet in united session as we have this afternoon, in consultation with President Brackett, and one paper will be taken from the American Pomological Society and one from

the other, as we think best to arrange the program for tomorrow. I am sure that the program that way will be much better than if we try to run one series and then the other, because we get the advantage of both by alternating these papers.

WEDNESDAY MORNING, SEPTEMBER 25, 1907.

The meeting was called to order by President Goodman at 9:30 A. M.

President Goodman: The Secretary has some letters to read.

[From Landes-Oekonomierat R. Goethe.]

Darmstadt, den 7. August 07.

Roquetteweg 24 p.

Sehr geehrter Herr:

Ich habe Ihren freundlichen Brief vom 19. Juli erhalten und mich sehr ueber die Einladung nach Jamestown gefreut. Indem ich Ihnen herzlich dafuer danke, bedaure ich aufrichtig nicht kommen zu koennen, denn meine Gesundheit ist nicht den Anstrengungen einer weiten Reise gewachsen, und ich bin auch der englischen Sprache nicht maechtig genug, um aus Verkehre mit den amerikanischen Pomologen diejenigen Anregungen nehmen zu koennen, zu denen sich in Jamestown gewiss reichliche Gelegenheit bietet. Wie gern haette ich die persoenliche Bekanntschaft der Herren gemacht.

Mit aufrichtiger Ergebenheit bin ich, sehr geehrter Herr

Ihr

GOETHE.

Meine besten Empfehlungen auch an die uebrigen Herren.

[Translation.]

Dear Sir:

I have your friendly letter of July 19th and am much pleased at the invitation to Jamestown. Though I thank you for it, I sincerely regret to say I am unable to come, since my health is not equal to the exertion of a long journey, and besides I am not well enough versed in the English language to get that stimulus from intercourse with the American pomologists for which the opportunity at Jamestown is so exceptional. How gladly would I have made the acquaintance of the gentlemen!

With sincere regards, I remain

Yours

GOETHE.

My best regards also to the other men.

[From Professor Dr. Wortmann, Director of the Royal Prussian School
of Horticulture.]

Geisenheim a. Rhein,
den I. August '07.

Herrn John Craig,
Secretary of the American Pomological Society,

Ithaca, N. Y.

Sehr geehrter Herr:

Indem ich Ihnen meinen verbindlichsten Dank abstatte fuer die sehr liebanswuerdige Einladung zur Theilnahme an dem vom 24-26 Sept. in Jamestown, Virginia, stattfindenden Kongresse, bedaure ich zugleich lebhaft, Ihnen mittheilen zu muessen, dass es mir nicht moeglich ist der Einladung zu folgen, da ich im September verschiedenen Kongressen auf der internationalen Obst- und Gartenbau Aufstellung in Mannheim beiwohnen muss.

Indem ich dem Kongresse in Jamestown guten Verlauf und besten Erfolg wuensche

bin ich

mit hochachtungsvoller Empfehlung

Ihr

sehr ergebener

WORTMANN.

[Translation.]

Dear Sir:

While I gratefully tender my thanks for the very kind invitation to participate in the congress of Sept. 24-26 at Jamestown, Virginia, I regret keenly to say that it is impossible for me to accept the invitation, since in September I must attend several congresses on the international horticultural exhibition at Mannheim.

Wishing the congress at Jamestown a good session and the best results

I am

Most respectfully

Yours

Very truly,

WORTMANN.

[From L. Spaeth, Nurseryman, Baumschulenweg bei Berlin.]

den 5 August, 1907.

An

die American Pomological Society

z. H. Herrn Secretaer John Craig,

Ithaca, N. Y., U. St. America.

In erwidierung Ihres Geschaetzten vom 19 Juli teile ich Ihnen ergehenst mit, das es mir leider nicht moeglich ist, in diesem Jahre nach dort zu kommen, ich empfehle Ihnen aber sich mit dem Vorstand des Deutschen Pomologenvereins Herrn Lorgus zu Eisenach in Thueringen, in Verbindung zu setzen.

Mich Ihnen bestens empfehlend zeichne

hochachtend,

L. SPAETH.

[Translation.]

In reply to your favor of July 19th I beg to say that it will unfortunately be impossible for me to come over this year, but I suggest that you communicate with the head of the German Pomological Society, Mr. Lorgus of Eisenach, Thuringia.

With best wishes I remain

Respectfully,

L. SPAETH.

Royal Horticultural Society, Vincent Square, Westminster, S. W.

August 13, 1907.

Dear Professor Craig:

The President and Council bid me to thank you very much for your kind invitation to our Society to send representatives to your Pomological Society's Jamestown meeting.

They desire me to offer to your Society and to yourself our friendliest greeting and the expression of our hope that you may all have a most successful and enjoyable gathering as we do not for a moment doubt you will. We shall look forward with great interest to read (as no doubt we shall be allowed the opportunity of doing) the report of your proceedings.

At the same time I am to present our sincere regrets that we can not ourselves avail ourselves of your fraternal and hospitable invite which we know we should have enjoyed, as well as profited by, so much.

Dear Professor, kindly convey to your confreres the contents of this letter and believe me to be

Yours very sincerely,

W. WILKS,

Secretary.

New York, N. Y., Sept. 18, 1907.

My dear Prof. John Craig:

It is with great regret and disappointment that I cannot hand in the inclosed documents in person at the pomological meeting next week, but the state of my health is such that the journey would be impossible for me. After having attended every meeting of the grand old A. P. S. for so many years, from Boston to Florida and California it seems hard not to be able to be on board the ship which one has helped to build. With best wishes for a successful meeting and a cordial greeting to my old friends and particularly to yourself,

Yours very sincerely,

F. M. HEXAMER.

Grand Rapids, Mich., Sept. 21, 1907.

Mr. John Craig,

Jamestown Exposition, Va.

My dear Mr. Craig:

It is with sincere regret that I am deprived of the pleasure of being with you at this biennial meeting and performing my part of any service that is needful. My best wishes go with the society in its activities and I am sorry not to be more useful in connection with its worthy efforts to advance and ennoble the science and art of pomology. I am now trying to recover from an accident in which my shoulder was dislocated.

Kindly refrain from allowing my name in any way to be connected with the official roster for the next term, as I dislike very much to be a simple figurehead in any work which to be successful requires activity and earnest effort. I have been honored by the Society far more than I deserve.

Please remember me with kindness to the veterans, who are so many of them my warm personal friends. I refrain from beginning a list of names for the limitations of a letterhead will prevent the enrollment of even a fraction of the men whose names run through my mind in connection with the grand old society.

With sincere regards, I am,

Yours sincerely,

CHAS. W. GARFIELD.

After the reading of the letters, Professor C. S. Crandall of the University of Illinois read a paper on behalf of the Society for Horticultural Science entitled, "The Plan and Side Issues," in which he discussed the planning of experiments in Station work, the unforeseen problems likely to arise as the work progressed, and the consideration

that might properly be given to these side issues. At the close of the paper the following discussion ensued.

DISCUSSION.

Mr. Kirkpatrick: Mr. President, Ladies and Gentlemen,—This is a very interesting question, and I wish to ask the gentleman who read the paper and those who are present and who have the knowledge for a little information. I am very much interested in this work, and I want to be informed, and I suppose there may be others here who would like to be informed. We understand that all our plants are hybrid, and if they are, we suppose that the pollen of a flower that comes on each one of our plants is also hybrid. Now, if the pollen of each hybrid plant is hybrid, and that the pollen is lodged on the pistils, which are also hybrid, will the result of taking pollen from any given flower and putting it onto the flowers of another plant, each of them being hybrid, invariably produce the same result? I pause for reply from some of those who know.

Dr. Webber: Not ordinarily, I think I can say.

Mr. Kirkpatrick: Thank you, Dr. Webber. Now, if it does not ordinarily, will it specifically, will it in any case, produce the same result? I pause for a reply.

Dr. Webber: We might have the same things,—it might result in the same thing.

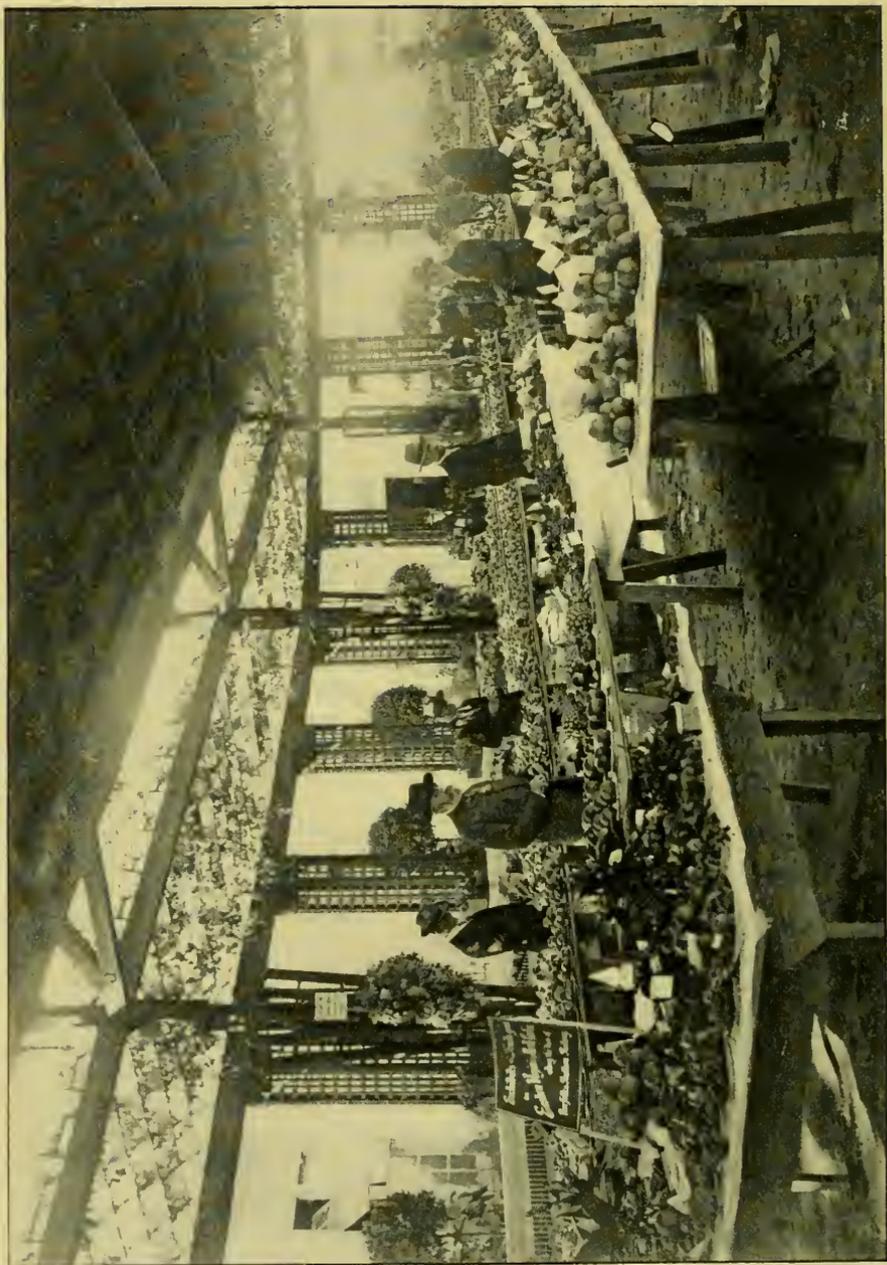
Mr. Kirkpatrick: Then there is a possibility of a similar result from the same process. Now, Mr. President, what I want to know is why we cannot adopt some system upon the broad basis mapped out by Professor Galloway in his speech, [before the Council of Horticulture, September 23rd, 1907] where he says that we ought to pursue some course in which we could co-operate, not only with the purely scientific mind, but with the purely practical mind. Professor Galloway contended that we ought to decide upon some course that would enable those who are engaged in these two related sorts of work to co-operate and harmonize. We have some scientific people who have said that a practical man without scientific knowledge and guided by men of science should not be permitted to go into this class of work, but should be prohibited entirely from the publications of the country, and prohibited by law from telling anything about what they do in a practical way. We have too much of that spirit, I think, and I was captivated with the idea of Professor Galloway when he said we ought to harmonize, ought to become more generous in our pursuit of knowledge. My way is to put the two varieties that I wish to blend upon each other, and let them grow on the same or separate stalks that are

immediately adjoining or standing right together, so that the pollen of one plant can fall upon the stigma of the other: and then I grow thousands and thousands of hybrids upon the male in one case and upon the female in the other case. I take those seeds and plant them by the tens of thousands and observe the results, and I get results that I am proud of—results that I think will be of great help to the country and the people—without any thought of commercial gain or personal prestige or anything of that kind. We have thousands of people all over this country who are hybridizing in many ways by hand, some experimentally, some according to the strictly laid down rules from the Department, requiring the placing of the pollen by artificial methods, and others in many different ways. Where we have a hundred using the exact methods, we have a thousand using the other sorts, and the latter are gathering results. Almost all the results we have, have come from accidental fertilization, and why discourage them, why keep them out of the prints? I think we have a cause for common rejoicing that Professor Galloway has invited us practical hybridizers to come to the front and be recognized.

Secretary Craig: May I say a word? I am very glad to have these words from Mr. Kirkpatrick, but I am quite sure that Mr. Kirkpatrick does not believe all he said; I think he said a little more than he intended to. I do not believe that there is any conflict between the scientific man and the practical man. I do not believe that any reputable so-called scientific man does not recognize the real practical work of the man in the field, and does not realize that nine-tenths of the results of hybridizing thus far have been secured by the so-called practical man. The so-called scientific man simply recognizes science as collected, accurate facts. The only difference between the method of a so-called scientific man and a man who is working in the field is that the one has time to record his facts and keeps them all before him, while the other does the work and gets the results. Science is recorded facts, and your deductions that you draw from those recorded facts are your principles. That is all the difference.

Another thing I want to say is that there is no real difference between the work of the practical man and the work of the scientific man, except that the scientific man records his work more accurately, and having those records, is able to go back and get something out of them, if he can, upon that work. The two are working together constantly.

I want to say one other word, and that is that the young men of this country, the students of this country, are in need of encouragement at the hands of the men in the field, of the orchardists, of the practical



FRUIT DISPLAY OF THE SOCIETY IN THE COURT OF THE STATES EXHIBITS BUILDING.

men. They need encouragement to go on and study more thoroughly, longer and more carefully than they have, so to train themselves that they can go into the scientific world, the field of investigation, and do the work thoroughly that is called for, that should be done. They need the encouragement of the men back in the orchard and on the farm—these practical men—to keep on and so equip themselves for the real scientific work of the world that they can do it properly. Our colleges are turning out a great many young men, and the demand for them in the field is so great that more and more of them go to work before they are properly qualified to carry it out.

Now, gentlemen, do not let us think for a moment that there is any antagonism between the man who is attempting to keep an accurate record of his work, and the man who is working in such a broad way that he has not time for it. The business of one man is to so record his facts that he is able to draw his deductions from it afterwards, and the business of the other man is to get his work done and to do as much as he can along the way, and they are both doing splendid work. It is only within the last twenty years that the government has enabled the States to do this work, and now we are getting to the point where the man in the Station can work consecutively, and we want the man in the field to work with him. There is no question of harmony, I am sure, and the fact that the Society for Horticultural Science is meeting with the Pomological Society is sufficient proof that there is harmony and sympathy, and that it is growing right along.

President Goodman: I want to call the attention of the Society to the fact that the Vice-Presidents of the different states have certain work to do in the nomination of the officers for the next two years. As chairman of the Vice-Presidents, I shall ask Mr. Woods to call this committee of Vice-Presidents together. Those representing states which have no Vice-Presidents have a right to meet and elect a Vice-President to meet in conjunction with other Vice-Presidents. These Vice-Presidents are to submit for nomination the officers for the next two years, and Mr. Woods will call this gathering together at the close of this session.

The first paper we will have read is one by Professor Scott of the United States Bureau of Plant Industry.

A PROMISING TREATMENT FOR BROWN ROT AND OTHER PEACH DISEASES.

BY W. M. SCOTT, U. S. DEPARTMENT OF AGRICULTURE.

When I received your Secretary's letter requesting me to make a report upon our experiments with the brown rot of the peach (*Sclerotinia*

fructigena [Pers.] Schrt.) my first impulse was to reply that I had no report to make. I decided, however, that perhaps the results of the past season's work, although not sufficient for definite conclusions, might nevertheless be useful to the members of this Society, especially in stimulating further investigation upon the subject. The principal objects of this report, therefore, are to suggest what appears to be a promising line of treatment for diseases of the fruit and foliage of the peach and to invite interested parties to make experiments along this line.

One great difficulty in the way of combating peach brown rot is the susceptibility of peach foliage to injury from applications of fungicides. Bordeaux mixture, the standard fungicide for most orchard diseases, cannot be used on peaches during the growing season without danger of serious injury. While a weak Bordeaux with an excess of lime may be used in a dry season without injurious results, the same treatment applied in a wet season will defoliate the trees. Indeed, so great is the danger of defoliation and crop injury that it seems almost criminal to recommend the use of even a weak Bordeaux on peach trees in foliage, except perhaps in a dry climate. We have reached this conclusion as a result of various experiments conducted by the Department in different parts of the country, and several of the experiment stations have had a similar experience. Other forms of copper, such as the ammoniacal copper carbonate and acetate of copper, even in very dilute solutions, have also proved to be seriously injurious and cannot be recommended except for dormant spraying.

Sulphur having been successfully used for years as a treatment for various mildews and in the lime-sulphur wash for peach leaf-curl, experiments with this substance in different forms appeared to be a promising line of investigation. In 1901 Prof. M. B. Waite suggested an experiment with some of the sulphur compounds and accordingly I tried very dilute solutions of potassium sulphid, sodium sulphid and calcium sulphid, all of which burned the peach foliage badly and the experiment was temporarily discontinued.

During the past season in connection with work on apple diseases in the Ozark Mountains, we had an opportunity to make further tests with sulphur mixtures for both peach and apple diseases. The work on peaches was conducted at Koshkonong, Missouri, in co-operation with the Missouri Fruit Station, F. W. Faurot and T. W. Ayres assisting. The work was done in the orchard of Hitt Brothers and the trees used were six-year-old Elbertas. Although the crop in the lower portion of the orchard was mostly killed by spring freezes the trees on the higher ground where the experiment was made escaped and produced about one bushel of fruit per tree.

The plots, consisting of five trees each, were necessarily small, because of the large number required and the unpromising and dangerous character of most of the mixtures used. Several different strengths each of Bordeaux mixture, sulphuric acid and boiled lime-sulphur washes were included in the experiment. These all burned the foliage so badly that their use was soon discontinued. The lime-sulphur wash reduced to 1 pound of sulphur and 3 pounds of lime to 50 gallons of water and boiled 45 minutes proved to be quite injurious; but the self-boiled and unboiled mixtures of sulphur and lime were not injurious and it was these that gave encouraging results.

The treatment and results of the several plots of most interest are condensed in the table below:

TABLE SHOWING TREATMENTS AND RESULTS IN EXPERIMENTS ON BROWN ROT AND SCAB OF PEACH.

PLOT	MIXTURE USED	DATES OF SPRAYING					TOTAL FRUITS	BROWN ROT		SCAB	
		May	June	June	July	July		No.	P.C.	No.	P.C.
1	Sulphur-Lime 10-15-50 self-boiled.....	22	6	20	5	13	1329	138	10.4	56	4.3
2	Sulphur-Lime 5-10-50 self-boiled.....	22	6	20	5	13	2426	250	10.3	227	9.3
3	Sulphur-Lime Milk 10-10-50.....	22	6	20	5	13	1574	220	14.	109	6.9
4	Sulphur-Water 10-50.....	22	6	20	5	13	1305	391	30.	44	3.4
20	Sulphur-Lime 10-15-50 self-boiled.....	..	6	20	5	13	1132	212	18.7	90	8.8
23	Sulphur-Lime 10-15-50 self-boiled.....	..	..	..	2	13	1269	252	19.8	373	29.4
24	Sulphur-Lime 10-15-50 self-boiled.....	..	..	..	2	..	1256	507	37.4	523	38.6
27	Bordeaux Mixture 15-5-50.....	..	..	..	2	13	1796	381	21.2	728	40.5
Check	10 untreated trees.....	..	..	..	..	..	1970	1444	73.3	555	28.1

Plot No. 1, as shown in the table, was sprayed five times with a self-boiled lime-sulphur mixture composed of 10 pounds of sulphur (flowers or flour) and 15 pounds of quick lime to 50 gallons of water. The lime and sulphur were placed together in a barrel and enough boiling water added to thoroughly slake the lime. The heat from the slaking lime boiled the mixture for several minutes and put it in a good mechanical condition for spraying. A small per cent. of the sulphur is dissolved and enough of the sulphides formed to make the mixture adhesive. The boiling can be prolonged somewhat by withholding some of the lime at first and adding it, lump by lump, when the mixture begins to cool. Also the heat may be conserved somewhat by covering the barrel with an old sack or other material. Some stirring is necessary to prevent burning. When the boiling ceased the mixture was diluted with enough cold water to make 50 gallons.

The trees were sprayed on May 22, June 6, June 20, July 5

and July 13, the last date being about two weeks before the fruit matured. The crop was picked July 30 to August 7 and the five trees yielded 1,329 fruits, 10.4 per cent. of which was affected with brown rot. This seemed rather encouraging when 73.3 per cent. of the crop on the check trees in adjacent rows rotted. Moreover, only 4.3 per cent. of the crop showed any marks of scab (*Cladosporium carpophilum* Thuem) and most of these were very small, almost harmless specks. Mr. Ayres, who was on the ground constantly, reports that the leaves showed no injury at any time during the season. When I made the final examination of these trees on August 27 the foliage was still green and apparently uninjured. The mixture had adhered so well that the leaves and branches were quite whitish on this date.

Plot 2 had the same treatment as plot 1 except that the formula in this case was reduced to 5 pounds of sulphur and 10 pounds of lime to 50 gallons of water. The results were about the same as in the first plot, 10.3 per cent. of the crop being affected with brown rot and 9.3 per cent. affected with scab. The foliage was uninjured and the mixture adhered well throughout the summer.

Plot 3 was sprayed on the same dates with an uncooked sulphur and lime-milk mixture composed of 10 pounds of sulphur and 10 pounds of lime to 50 gallons of water. The lime was slaked in the ordinary way and the sulphur worked into it, forming a paste. Then the mixture was diluted to make 50 gallons. This mixture was more difficult to apply, required more agitation and did not adhere so well. However, it held the rot down to 14 per cent. of the crop and the scab to 6.9 per cent., indicating that the unboiled sulphur-lime mixture has considerable fungicidal value.

Plot 4 was sprayed on the same dates with 10 pounds of sulphur suspended in 50 gallons of water. The sulphur was worked into a paste and then diluted. The rot on this plot ran up to 30 per cent. of the crop and the treatment was, therefore, a failure. However, only 3.4 per cent. of the fruit was affected with scab. The sulphur without the lime seems to have been entirely sufficient to control the scab. Sulphur in water settles readily and a good agitator is necessary to keep it thoroughly stirred.

Plot 20 was sprayed with the same self-boiled mixture as given in plot 1 and the applications were made on the same dates except that in this case the first application (May 22) was omitted. The percentage of rot (18.7 per cent.) was rather high, owing apparently to the omission of the May treatment. However, only 8.8 per cent. of the crop was affected with scab. Some scab infections had taken place before the treatment began (June 6) and on unsprayed trees this disease developed quite rapidly after the middle of June.

Plot 23 was sprayed with the same self-boiled mixture on July 2 and July 13, only two applications being made. Nineteen and eight-tenths per cent. of the crop rotted and 29.4 per cent. was affected with scab. The fruit was already badly scabbed before the treatment was begun and the cracking due to this disease opened the way for brown rot.

Plot 24 was sprayed on July 2 with the same mixture. Only the one application was made and it was quite insufficient for both brown rot and scab, 37.4 per cent. of the crop being affected with the former disease and 38.6 per cent. affected with the latter.

Plot 27 was sprayed with Bordeaux Mixture consisting of 1 pound of copper sulphate and 5 pounds of lime to 50 gallons of water. The applications were made on July 2 and July 13, with the result that 21.2 per cent. of the crop was affected with brown rot and 40.5 per cent. affected with scab. The treatment was entirely too late for scab, and the brown rot would no doubt have been controlled better if earlier applications had been made. The plots in which spraying with Bordeaux was commenced May 22, when the sulphur treatment was begun, were discontinued on account of severe foliage injury due to the mixture. These Bordeaux plots, not having been carried through the season, are therefore omitted from the table.

The check plot, consisting of ten trees located in rows adjacent to the treated rows gave 73.3 per cent. of the crop affected with brown rot and 28.1 per cent. affected with scab.

By comparing the figures of the check plot with the results obtained in the various treated plots the effect of the treatment in each case will be apparent. In every plot where sulphur was used before scab infection took place this disease was almost completely controlled. As a rule the few fruits that were affected had mere specks of scab instead of the large spots and cracks that were so common on the unsprayed trees.

As to brown rot, this disease certainly yielded to the treatment, especially in plots 1 and 2, where about 90 per cent. of the crop came through in a sound condition. However, this is the result of only one season's work and we cannot, therefore, recommend the treatment with full confidence. At least one more year's work will be necessary to definitely determine the value of the mixture for the treatment of this disease. Occasional rains occurred at Koshkonong while the experiment was in progress, but the season was comparatively dry, or at least it would not be called a wet season. The rainfall as recorded by the voluntary observer, Mr. John W. Hitt, at Koshkonong, Missouri, was as follows: May, 10.89 inches; June, 4.9 inches, and July, 1.67 inches. Enough rain fell to produce Bordeaux injury to peach foliage and to cause a considerable outbreak of brown rot. During a very wet season,

however, the treatment might fail to control the rot. In fact, this disease is influenced by so many factors that I doubt if an entirely satisfactory treatment for it will ever be found. The plum curculio punctures the skin and admits the fungus to a certain extent in spite of all the spraying that can be done. Some of the leaf-footed plant bugs puncture and suck the rotting and the sound fruit indiscriminately and, therefore, undoubtedly distribute the spores of the fungus and perhaps even insert spores with their beaks beneath the skin of the fruit. It seems quite impossible to protect against such infections.

The frosty mildew (*Cercospora persicae* Sacc.) was also controlled by the self-boiled lime-sulphur mixture (10-15-50). This was demonstrated especially on Picquet's Late, which variety was sprayed on July 26 and again on August 8. I examined the trees on August 27 and found the foliage in a vigorous, healthy condition, practically free from leaf diseases. The leaves of the unsprayed trees were badly affected with the frosty mildew, had turned yellow and were falling considerably. Some of these leaves were also affected with a shot-hole disease due apparently to *Bacterium pruni* Erw. Smith. It will doubtless prove to be an efficient remedy for the peach powdery mildew and other diseases requiring treatment while the trees are in foliage. It would seem, therefore, that these experiments have resulted in the development of an efficient fungicide that can be used on peach trees in foliage without danger of injury. Heretofore practically no known fungicide could be used on peach foliage without more or less injurious results, and for this reason we have been obliged to allow some of the more important peach diseases to go untreated.

Another encouraging feature of the lime-sulphur experiments came out in the work on apples at Bentonville, Arkansas. Details of the work can not be discussed here, but I will briefly give the results of a test on bitter-rot (*Glomerella rufomaculans* [Berk.] S. and V. Schr.). A block of Ben Davis trees were sprayed with the self-boiled mixture composed of 10 pounds of sulphur and 15 pounds of lime to 50 gallons of water. Paris green, at the rate of 6 ounces to 50 gallons, was added for codling moth. Four applications were made at intervals of two weeks, beginning on July 11. Of the crop from one tree 92.7 per cent. was free from bitter-rot. The others averaged about the same, while only 17 per cent. of the crop on the unsprayed trees in the same block were free from the disease. Bordeaux mixture applied on the same dates gave slightly better results. The lime-sulphur mixture adhered well, almost as well as the Bordeaux. It was absolutely harmless to the foliage and fruit so far as one could see.

Work with apple scab (*Venturia inaequalis* [Cke.] Adh.) was com-

menced too late for satisfactory results, but the indications were that this disease might be controlled with the self-boiled lime-sulphur mixture and the fruit russetting and the foliage injury due to Bordeaux be thus avoided. The New York Agricultural Experiment Station* has already shown that the regular boiled lime-sulphur wash may be substituted for Bordeaux mixture in the dormant application for this disease.

Several entomologists have experimented with self-boiled lime-sulphur mixtures as a dormant spray for the San Jose scale. While as a rule the results have not been entirely satisfactory, they show that a considerable per cent. of the scale may be killed with such washes. It would seem probable, therefore, that the self-boiled lime-sulphur wash used in our experiments might prove to be useful as a summer wash for the San Jose scale. It would, very likely, prevent the young scale insects from crawling out so freely onto the fruit of the apple and the pear.

Mr. Hartwell: I was wondering whether his cooking the sulphur would put it in shape to get it through the nozzle.

Mr. Scott: I will explain in answer to your question that as a matter of fact the sulphur is really not dissolved—the larger per cent. of it is not dissolved—but is in a mechanical mixture with the water, or suspended in the water, as it is after it is diluted, like Paris green and things of that sort. I believe Mr. Haywood of the Department of Agriculture has found that about one part in twelve of the sulphur goes into solution cooked in that way with the heat of the lime, but by putting the sulphur in with the lime, and slaking the lime with the hot water, it places it in a much better mechanical condition than suspending it in the water with slaked lime. The idea was that enough of the sulphur would be brought into solution to make the mixture adhere to the fruit and foliage, and that is just what we accomplished,—enough of the sulphur went into solution combined with the calcium to make it adhesive. As I said at the outset, these results are not sufficient upon which to base recommendations for the control of brown rot, but it gives us a clue for future experimentation.

I will say in answer to a question that has been asked me, that we did try on apples the regular boiled lime-sulphur wash, reduced to one and one-half pounds of sulphur and three pounds of lime to fifty gallons of water, and burned the foliage,—not badly, but as badly as Bordeaux does,—so that we did not keep up the treatment.

Professor Taft: At what time did those peaches blossom?

Mr. Scott: We sprayed them first on May 22nd, and they were out

* N. Y. Agr. Exp. Station Bul. 262 (1905).

in blossom about March 15th, so they had been in blossom two months before.

Professor Taft: Would that correspond about with July, with us in the North?

Mr. Scott: Yes. In further support of the fungicidal property of this lime-sulphur wash, I will say that the peach trees that were sprayed with it were almost absolutely free from the frosty mildew, the *Cercospora* that occurs very commonly there, while the trees in the neighborhood were badly affected. Some minor diseases were also controlled.

Mr. Davidson: I would like to ask the gentleman if he considers that the best results were obtained in Plat 2.

Mr. Scott: Well, we are not in a position to draw conclusions. These experiments should be made again next year and in different parts of the country, and more data obtained. Of course it looks from this as though Plat No. 2 were the best, but I do not see any reason why the ten pounds of sulphur should not be used. There may have been some variation there in the individual trees. I would not like to recommend the treatment for Plat No. 2. I would prefer to say, if any one wants to try it, to use ten pounds of sulphur and fifteen pounds of lime to fifty gallons of water.

Mr. Davidson: Do you think if the mixture were boiled in some other way, that it would affect the foliage?

Mr. Scott: Yes, we boiled it with fire under the kettle and used it in that way, and burned the foliage, so that it would not do to use it cooked in that way. I should state now, as another factor, that the weather was quite dry. There were a number of showers and occasionally some rather hard rains; but in a wet, muddy season, such as we frequently have in Georgia, the treatment might not be of any benefit, so there is another factor we must look out for. This is merely a suggestion of what may possibly be done in the way of experimenting for the control of brown rot.

Mr. Van Hoeff: It seems to me those experiments with regard to Bordeaux mixture are somewhat incomplete, in so far as the treatment was not commenced until very late, and also as regards the application of smaller amounts, or one and one-half pounds of copper to the fifty gallons. It would be of interest to find a strength at which copper solutions would be effective in subduing spores, that is, the minimum quantity, and also the minimum quantity at which the copper solution injured the foliage of the peach trees. It may very well be the case that one-half pound of copper sulphate applied three times will subdue the rot and not injure the foliage. In fact, I have an example in my mind of a small grower who is very successful, who uses only two ounces of copper sulphate to fifty gallons of

water with a corresponding quantity of lime. He had no rot this year, and attributes it to this treatment. It looks like a small quantity, but nevertheless there is nothing to show that so small a quantity would not be effective if properly applied. It seems to me under this experiment there is an incompleteness in that direction.

Mr. Munson (of Texas): I would like to ask a question, that is, if he has used spraying in the winter time to prevent the brown rot?

Mr. Scott: Yes, we have tried the Bordeaux mixture and the lime-sulphur both in the winter time, without success against brown rot.

Mr. Woods: Was the sulphur perceptible on the fruit when it was ripe?

Mr. Scott: Yes, it was to a considerable extent, the lime especially. The sulphur was not so noticeable as the lime.

Mr. Van Lindley: With regard to the brown rot in peaches, our experience was that in two years we had nearly all our peaches destroyed with it. We had a great many trees of Garland, and that variety rotted the worst of any. That was for two years. Then I employed a man that understood the work pretty well, and he put on the common sulphur-and-lime, (there was also scale in the orchard) putting in five pounds of blue stone. He applied it in the winter time and it was put on carefully. Then in the summer Bordeaux mixture was used, with only one-quarter of a pound of blue stone, and it entirely cleaned out the rot. We did not have a bushel of rotten fruit that year on our premises. Still another year we put in two pounds of arsenate of lead, and it did no injury. We saved the fruit, and so continued this practice the next year, but using five pounds. Since that time, we have had no rot and no worms.

Professor Taft: For ten years I have held this disease pretty well in check. I have sprayed in the winter time, or at least before the buds started, using two pounds of copper sulphate to a barrel of water, and then after the fruit has set, within the next ten days have used two pounds of copper sulphate and four pounds of lime to fifty gallons of water, together with a small amount of Paris green, the idea being also to control the curculio. Then for the early kinds, which rot with us quite badly, I have sprayed beginning about the first or tenth of July, using this weak copper sulphate solution, four ounces to fifty gallons of water. By applying this once in two weeks, up say to the middle of August, we have controlled the rot entirely.

Mr. Waite: The discussion is being carried so far about this winter treatment that I cannot help saying a word. With us it has been tried repeatedly and I have tried it myself. I lost a crop of Burbank plums this year almost completely from brown rot, although the trees were thoroughly sprayed with copper sulphate. We have repeated the

experiments two years, with Bordeaux and lime-sulphur, the straight Bordeaux, the straight lime-sulphur, and the Oregon wash, and there is no question but that it falls down completely in a wet season.

Mr. Munson: I was going to ask Mr. Scott the result of his trial of the sulphide of potassium,—he has used that, I believe.

Mr. Scott: We used sulphide of potassium several years ago, but did not try it this year. I have forgotten just the proportion, but a very dilute solution of sulphide of potassium scorched the foliage quite badly, and our record showed that we had burned the foliage badly in previous years' experiments, and we therefore did not take the matter up this year at all.

Mr. Waite: It seems to me that in this discussion we are to some extent really missing the very remarkable point that Mr. Scott is making here, and that is, that we have for the first time in all the trials a fungicide which is effective against the brown rot and the scab fungus as well as several other parasitic diseases, which can be sprayed on the foliage without burning it in the summer time. That is a new point, and whether or not the treatment is successful against brown rot, it is a noteworthy point. Heretofore we have had no fungicide of any sort whatever, either sulphur or copper, that we could use with safety and that would control these diseases. This fungicide is self-cooked lime-and-sulphur—that is the important new thing.

Mr. Scott: In answer to Mr. Van Hoefft, it would seem from what he said that if he had left out the Bordeaux entirely and used lime, that he would have had good success. I wish we had made one experiment with lime alone, for I think lime would answer pretty well. We had Bordeaux, but the foliage was so badly damaged that we did not include it in the chart at all, or care to discuss the matter.

FRUITS ORIGINATED IN CANADA.

By W. T. Macoun, Horticulturist, Central Experimental Farm, Ottawa.

Up to the present time no extensive list of fruits which have originated in Canada has been published, but it is now thought desirable owing to the rapidly developing importance of the Canadian fruit industry that such a list should be at least begun. It is, therefore, with much pleasure that we present before the American Pomological Society a preliminary paper, believing that the best place to introduce such a subject is before this Society which has done so much to systematize nomenclature and to bring new fruits into notice.

Fruits have been cultivated in Canada almost or quite as long as they have been in the United States. Early in the history of the coun-

try, which as you know was discovered long before Jamestown was founded, apple trees were successfully planted by the French in Nova Scotia; and by 1663, according to history, fruit trees were growing on the banks of the Dauphin, the L'Equille, and L'Original rivers and in the vicinity of Minas Basin and the rivers Canard and Gaspereaux. According to Pierre Boucher, who wrote in 1663, trees were also growing in the vicinity of Montreal, Province of Quebec, for he states: "Not many trees have been introduced from France, except some apple trees which bear very fine fruit in large quantity, but there are not many of these trees yet." In Ontario and the other provinces of the Dominion the cultivation of fruits was begun later. For nearly 300 years then, fruits have been cultivated in Canada, although little progress was made while the country was thinly settled and the permanence of the settlements uncertain. There is no doubt, however, but that from the very earliest of the introductions have sprung some varieties distinctly Canadian. While the tree fruits introduced from France and England to Nova Scotia were many of them suited to the conditions there, and have been the parents of many seedlings showing evidence of the blood of old French and English sorts, it was quite otherwise in the case of the province of Quebec, where the cold winters must have destroyed most of the trees. But in the Fameuse apple, which Canadians claim to be the best apple of its season, there is an instance of a variety, or a Canadian seedling, as we prefer to think, that has survived; and in the seedlings of Fameuse there is a group of varieties bearing a close resemblance to the parent, which are proving of great value. In Ontario where the cultivation of fruits was begun somewhat later than in the provinces of Nova Scotia and Quebec, the parentage of most of the seedlings may be traced to American varieties, which were already quite numerous when orchards were first planted in Ontario.

Up to within a few years ago most of the fruits of merit which had originated in Canada were chance seedlings, or seedlings which had originated with little or no effort on the part of man. There is no doubt but that considerable seed was planted by the early settlers, but in those stormy times the young trees must have received little care. Later there was less incentive to originate trees from seed, as good varieties could be procured from the New England states, hence most of the Canadian fruits of which we now have a record have originated by chance from seed fallen by the wayside.

It is not our purpose to present at this time a long list of varieties which, for the most part, would be uninteresting, and which can be studied if desired when this paper appears in the Proceedings, but to say something more about those Canadian varieties which have now more than a local reputation.

APPLES ORIGINATED IN CANADA.

The apple being the most important Canadian fruit has naturally given more desirable sorts than any other kind of fruit.

Perhaps the most noteworthy of all Canadian apples is the Fameuse. While some writers have tried to show that this apple is of French origin, and was merely introduced from France by the early Canadian settlers, there is no good evidence to support any such contention, and while there is no positive proof that it is Canadian, the evidence is very strong that it was originated somewhere along the St. Lawrence river near Montreal or Quebec early in the 17th century. The Fameuse and some of its seedlings stand out prominently among the high class dessert apples of their season, and in addition to their beauty and quality they are very profitable. If an unprejudiced vote were taken of all fruit growers who are well acquainted with apples, on what were the two best dessert varieties of this season, which is November to January in Canada, we believe that the vote would be almost unanimous in favor of the Fameuse and the McIntosh—the latter a Canadian seedling of the former. These two apples are always in great demand in Canada, the United States and Great Britain, and high prices are usually paid for No. 1 fruit.

Following are the descriptions of these fruits:

FAMEUSE. (SNOW.)

Origin unknown. Supposed to have been a seedling originated near Montreal or Quebec early in the 17th century. Fruit of medium size, roundish to oblate; skin pale yellow, either almost or completely covered with deep red, or splashed and washed with red when fruit is not well colored; dots not prominent; cavity of medium depth and width; stem short to medium in length, slender or moderately stout; basin small, somewhat narrow, almost smooth; flesh very white, very tender, juicy, subacid with a fine flavor and a delicate perfume; core small; quality very good to best; season early winter. Tree a strong grower, spreading and a heavy bearer. This is one of the best dessert apples, and one of the most profitable where it succeeds well.

MC INTOSH.

Originated with John McIntosh, Dundela, Ont., early in the 19th century. Probably a seedling of Fameuse. Fruit above medium to large, roundish, slightly angular, highly perfumed; skin pale yellow, almost entirely covered with crimson, dark on sunny side and brighter on rest of fruit; dots few, small, yellow, distinct, but not prominent; cavity of medium depth and width; stem short, stout; basin narrow, almost smooth, medium depth; calyx partly open; flesh white, crisp.

very tender, melting, juicy, subacid, sprightly with a pleasant aromatic flavor; core of medium size; quality very good to best; season November to January. Tree hardy, and a strong moderately upright grower and an annual and medium bearer. For its season the McIntosh apple is one of the best varieties grown. It is very subject to spot in some places, but this has not been the experience at the Central Experimental Farm, where the trees are sprayed. It has also not been found to be a shy bearer as reported by some.

In the provinces of Ontario and Quebec are many orchards of Fameuse trees and in the States in which this variety succeeds it is also very popular and has been largely planted. It is only during the last forty years that the McIntosh apple has been propagated, the son of the originator first beginning this work, and other nurserymen eventually doing the same. The oldest orchards are in the vicinity of the original tree, which still remains alive, although in bad condition. Naturally there was not much fruit available until comparatively recently, and it is only during the past ten or fifteen years that the fruit has become widely known. So great is the popularity of this variety at present that the nurseryman cannot meet the demand for trees. The McIntosh is superior to the Fameuse in several respects. It is larger, more uniformly handsome, and by most people considered of better quality. It is perhaps not quite so productive as Fameuse, but in our experience is a more regular bearer. Like the Fameuse, it is subject to spot, but this can be prevented by thorough spraying.

Another Canadian apple of the Fameuse group, which though not quite as useful as the McIntosh, is a very profitable sort on account of its handsome appearance, productiveness and good quality, is the Scarlet Pippin, which is described as follows:

SCARLET PIPPIN. (LEEDS BEAUTY.)

Originated at Lyn, Leeds County, Ontario, near Brockville. Fruit of medium size, oblate to roundish; skin yellow, waxy, more or less washed and splashed with bright and dark crimson, and covered with a light bloom; cavity deep and of medium width; stem short, slender; basin narrow, shallow, almost smooth; calyx generally closed; flesh white, firm, crisp, tender, melting, juicy, a mild subacid, with a pleasant but not high flavor; core small; quality very good; season early winter. A very attractive looking apple, and said to sell better than Fameuse, which it does not, however, equal in quality. Tree a strong, upright grower and a heavy bearer.

Closely related to the Fameuse, if not of the same group, is the St. Lawrence, which also is scarcely surpassed by any apple of its season.

which is between Duchess and Wealthy. It is grown in considerable quantities in the province of Quebec and finds a ready sale among the best class of customers.

ST. LAWRENCE.

Originated in Montreal early in the 19th century. Tree a strong, spreading grower, moderately productive. Fruit above medium to large; oblate conic; cavity medium depth, open; stem short, stout; basin medium depth and width, wrinkled; calyx closed; color pale greenish yellow, splashed and streaked with dark purplish red; dots obscure; skin thin, tender; flesh white tinged with red, tender, juicy; core medium; subacid, pleasant flavor; very good quality; season mid-September to October.

The Fameuse reproduces itself more nearly to type than some other kinds of apples, hence there are a number of other Fameuse seedlings not so well known as those just mentioned, which have distinct points of merit. Among these are: Louise, Elzear, Germain St. Pierre, Victoria, St. Hilaire, Fameuse Sucree, Green Fameuse, Rufus, La Victoire, Canada Baldwin, Fameuse Noire, Brockville. All of these fruits have characteristics which make it easy to place them in the Fameuse group.

Perhaps the most important apple of Ontario origin is the Ontario, which was originated by the late Charles Arnold, Paris, Ont., by pollinizing the Northern Spy with Wagener. This variety is proving very profitable in those sections of country where it succeeds well. It shows plainly the blending of the Wagener and Spy, having the characteristics of both in about equal proportions. It is an early bearer and quite productive and resembles Northern Spy very much in outward appearance, but usually is more oblate and has more bloom. In character of flesh it is much like both parents, and in flavor also. The following is a description of it:

ONTARIO.

Originated by the late Charles Arnold, by crossing Wagener with Northern Spy. Fruit large to very large, oblate, sometimes roundish, slightly angular; skin yellow, usually well washed and splashed with bright red and carmine, and there is also a pale pink bloom which adds to the appearance of this variety; dots few, pale and a little larger and more distinct than on the Northern Spy; cavity deep, open, slightly russeted; stem short, moderately stout; basin medium to rather deep, slightly wrinkled; calyx small, open or closed; flesh creamy white, crisp, tender, juicy, a brisk subacid (more acid than Northern Spy), sprightly, slightly aromatic; core small; quality very good; season midwinter to late winter. Tree moderately vigorous, but an early and heavy bearer. One of the best apples, both for commercial purposes and for home use.

The Baxter is a large, handsome apple which is growing in popularity every year. It does not bear much until the tree has been over ten years planted, but from that time on it bears medium crops almost annually. The Baxter has not been exported much yet, but it is such an attractive apple in the barrel that it is bound to be popular, and already high prices have been paid for it, in one instance it having been quoted higher than Tompkins King; to which, however, it is much inferior in quality. It may be described thus:

BAXTER.

Very large, roundish; cavity deep, medium width to open; stem short to medium, slender to moderately stout; basin medium depth and width, smooth; calyx open; color yellow, well splashed and washed with orange red, with purplish splashes; dots moderately numerous, large, yellow, prominent; skin thick, moderately tough; flesh yellow, tinged with pink, coarse, moderately juicy, tender; core small; above medium quality. Season December to February. A very large handsome apple, but too coarse for dessert purposes and not juicy enough.

Mention should be made here of the Banks Gravenstein apple, a sport of Gravenstein which originated with Mr. Banks, Nova Scotia. This variety is much more highly colored than Gravenstein, but resembles it in other respects.

The late P. C. Dempsey of Trenton, Ont., formerly of Albury, originated a number of good apples by cross-breeding, but two of the best of these only need be mentioned at this time. Both of these are from a cross of Golden Russet female with Northern Spy male. The Walter may be described here:

WALTER.

Very large; roundish, rather irregular; cavity deep, medium width; stem short, moderately stout; basin deep, medium to open; almost smooth to moderately wrinkled; calyx open; color greenish yellow, splashed and streaked with red; dots few, small, white, distinct; skin moderately thick, moderately tender; flesh yellow, tender, rather coarse, juicy, melting; core small; subacid, pleasant, high flavor; good to very good quality; season October. There is a suggestion of Gravenstein flavor about this apple.

At the Central Experimental Farm, Ottawa, considerable work has been done in originating apples, and the results of this work are now beginning to be apparent. Of about five thousand trees which have been grown since 1890, there have been seventy-seven varieties retained and named. A large proportion of these will not be of any commercial value in the best apple districts, but owing to their hardiness it is hoped

that they will be useful in the colder parts of Canada where the apple is not successfully grown at present. In addition to these 5,000 trees there have been fruited over 200 trees of about 800 originated by Dr. Wm. Saunders, the result of work in crossing the Siberian crab *Pyrus baccata* with different varieties of the apple. Of these many varieties have been named and distributed to several hundred points in the Canadian prairie provinces, and are proving hardy everywhere they have been tried.

Of the varieties of apples originated at Ottawa which were named, four are from crosses made by Prof. John Craig, Secretary of the American Pomological Society, when Horticulturist of the Central Experimental Farm, Ottawa, Canada, between McMahon female and Scott Winter male. These varieties appear to have distinct points of superiority over their parents, but will have to be tested longer. From 3,000 seedlings of Russian apples fifty-nine have been named, only four of which seem to be superior to the varieties imported from Russia. The remaining fourteen sorts are natural seedlings of Wealthy, Swayzie and Lawver, and it is expected that from the large number of seedlings of Wealthy, Swayzie, Fameuse, McIntosh, Northern Spy, Lawver, etc., yet to fruit, many fine apples will come, as about twenty-five per cent of those which have fruited already are equal or better than named varieties of their season now on the market. The trees of some very interesting crosses between McIntosh and Lawver began to fruit this year and valuable results are expected.

When the list of apples is completed for the Proceedings of the American Pomological Society probably 300 named varieties of Canadian origin will be recorded.

PEARS.

The number of good pears which have originated in Canada is not very great, mainly for the reason that the pear districts are more limited in extent than the apple, and that chance pear seedlings do not stand as good a chance of surviving as apple seedlings. Two varieties only need be mentioned, namely, Dempsey and Ritson. The following descriptions of these pears are taken from "Fruits of Ontario."

DEMPSEY.

The Dempsey was originated near Trenton in Prince Edward County, Ont., by Mr. P. C. Dempsey. It was produced from a seed of a Bartlett, fertilized with Duchess d'Angouleme. The fruit is firm and consequently would ship well.

Tree vigorous and productive; fruit large, oblong, obovate, pyriform; skin smooth, yellowish green, with a brownish red cheek in sun:

stem about one inch long, set in a fleshy base, and with almost no cavity; calyx nearly closed in a moderately deep uneven basin, core small; flesh white, fine grained, tender, almost melting, with sweet, delicious flavor. Season late October to November.

RITSON.

A delicious dessert pear, which is worthy of a place in every fruit garden. It is not surpassed for canning or for pickling, having an aroma and peculiarly agreeable flavor.

Origin Oshawa, Ont., with Mr. Wellington. In response to our enquiry, Mr. W. E. Wellington writes: "My grandmother, Mrs. John Ritson, planted the seeds from a pear which had been sent to her from Boston. The tree has always stood on my grandmother's homestead as long as I can remember."

Tree strong, healthy, upright grower. The original tree is now of immense size, probably over 30 feet high, and about 100 years old. An annual bearer of nice, evenly formed fruit. Fruit, size medium, form obovate pyriform, usually one-sided; color of skin yellow, heavily shaded with golden russet and numerous minute dots of a darker russet; stem one inch long, often inserted in a fleshy protuberance, and at a slight inclination; calyx open wide in a very shallow, regular basin; flesh creamy white, texture fine, tender, buttery, juicy; flavor sweet, delicately perfumed; quality dessert, very good to best; very good for cooking; value, market, promising for a special trade; season October.

PEACHES.

From the fact that peaches are propagated on peach stocks grown from stones of cultivated varieties of peaches, more good seedlings have been noted than of pears and plums, as if the budded variety dies, the stock will often grow up and produce fruit. Only three varieties, however, need be mentioned here. These are the Banner, Fitzgerald and Tylhurst, the descriptions of which are taken from "The Fruits of Ontario."

BANNER.

A late market peach popular among the Essex fruit growers. Origin Essex County, Ontario. First fruited on a large scale in 1903. Tree hardy and productive; fruit medium to large, round; color yellow with red cheek, attractive; flesh yellow; texture, fine grained, moderately juicy; flavor rich; quality good; value first class for market; season, early October.

FITZGERALD.

Since the Early Crawford has been such a popular peach both for home use and market, every new introduction of a variety which is of the same class has been welcomed by the public, especially where it may be used to extend the season. The Fitzgerald is not so large as the Early Crawford, but to many the flavor is finer for dessert, and its season is a trifle later. Like the latter, it is too tender for very long shipments. Origin in the garden of Mr. Fitzgerald, Oakville, Ont., about 1895. Tree hardy, healthy and productive. Fruit, size medium to large; form roundish ovate; color bright yellow, covered with deep red; down moderate in quantity; cavity broad and deep; apex a small point in a slightly depressed basin; suture distinct; stone free; flesh yellow, with red at pit; texture tender and juicy; flavor excellent; quality dessert, good; value, home market, first class; season early to mid-September in Niagara district. Adaptation, one of the hardiest varieties and successfully grown in Georgian Bay district.

TYHURST.

A very attractive golden yellow peach, considered a profitable variety for the commercial orchard. After fruiting it several years at our Maplehurst Station, we think its value has been somewhat over-estimated.

Origin, a seedling raised by Mr. Tyhurst of Leamington, Essex County. This gentleman was so pleased with the peach that he planted nearly his whole farm with trees grown from its pits, and made considerable money out of its venture. Tree moderately vigorous, quite productive; fruit is inclined to drop as soon as ripe; fruit, size medium; form ovate, suture distinct on one side, terminating in a small black sharp point; color deep yellow, with tinge of red in the sun; skin separates easily from the flesh; flesh free; color pale yellow; texture very tender, fine grained, melting, juicy; flavor excellent; quality dessert, very good to best; cooking, very good. Value home market, first class; distant market, second class because too tender. Season mid-September.

CHERRIES.

Few good cherries of Canadian origin have been recorded. The only one which deserves mention here is the Windsor, a cherry of the Bigarreau class which owing to its superior hardiness has proved a valuable acquisition. The following description is from "Fruits of Ontario."

WINDSOR.

A valuable late cherry for either home use or market, its firm flesh making it a better shipper than most dark-colored cherries. Indeed, from

the middle to the end of July, when this cherry is at its best there is no other to compete with it, the Elkhorn being just over. The tree is not an early bearer, and the fruit is very subject to the rot in some locations, and needs thorough spraying with Bordeaux to prevent this fungus.

Origin with James Dougall, Windsor, Ontario. Tree vigorous, upright, symmetrical grower, healthy, very hardy, and productive; fruit large, 15-16 inch long by one inch wide; form round, obtuse, heart-shaped; color dark red, turning darker as it hangs; stems one and one-half inches long, set in a moderately deep cavity; in twos and threes; suture obscure; flesh yellowish with reddish tint; texture firm, moderately juicy; flavor rich and sweet; quality dessert, very good; cooking poor. Value first class; season late July; adaptation farther north than most Bigarreau cherries.

PLUMS.

Comparatively few *Domestica* plum seedlings have come into prominence, for the same reason mainly as with the pear, the tenderness of the fruit buds limiting the area also in which they may be grown successfully. Two Canadian varieties which are sold by nurserymen are the Glass and Kingston, the following descriptions of which are taken from the "Fruits of Ontario."

KINGSTON.

A valuable market variety. Origin Province of Ontario. Tree vigorous and productive; fruit, size medium to large, form oval; color dark purple, with thin blue bloom; stem slender, about five-eighths of an inch long, inserted in a small, deep cavity; suture shallow; apex a small point; flesh, color yellowish green; flavor tart; quality cooking, good. Season early September.

GLASS. (GLASS'S SEEDLING.)

A commercial variety resembling Quackenboss. Origin with Alexander Glass at Guelph, Ontario. Tree hardy, vigorous; habit upright; foliage peculiar dark green; productive; class *Domestica*. Fruit, size large; form, round oval, irregular at apex; suture distinct; apex depressed; stem three-quarters to one inch long; color dark purple with thin blue bloom and white dots; skin thick, firm; flesh free from pit; color greenish yellow; texture juicy; flavor sweet and agreeable; quality dessert, fair; cooking, good; value, market, good. Season September.

On the Island of Montreal in the Province of Quebec where *Domestica* plums have probably been grown for nearly three centuries, many seedlings have originated, some of which are distinctly hardier in fruit bud than those usually listed. Three of the best of these are the Raynes,

Mount Royal, and Lunn. Descriptions of these plums will be published in the complete list.

Work is being carried on at the Central Experimental Farm in the improvement of the Nigra and American plums, and already several seedlings have been named.

GRAPES.

There have been a few grapes originated, some of which are sold by nurserymen, and some are not to be found on any trade list. Those which may be mentioned here are the Brant, Canada, Moyer, Kensington, Burnet, Jessica and Northern Light.

The Brant and Canada were originated by the late Charles Arnold, Paris, Ont., and are crosses between Clinton and one of the *Vinifera* varieties. Both of these grapes are small, and are acid and sprightly with a pleasant flavor. Their value lies in their earliness and ability to ripen in the North, even in cool seasons. The Moyer, while an unproductive variety, is also valuable for home gardens, as it is a sure ripener where most grapes do not mature.

One of the best grapes of Canadian origin is the Kensington, originated by Dr. Wm. Saunders, Director of the Dominion Experimental Farms. It is a white grape, a cross between Clinton female and Buckland's Sweetwater male. It is a little too late in ripening to be useful at Ottawa, but further south it should be very desirable. Following is a description of it.

KENSINGTON.

Originated by Dr. Wm. Saunders at London, Ont., by crossing Clinton female with Buckland's Sweetwater male.

Vine a strong grower and productive. Bunch large, long, compact, shouldered. Fruit medium size, oval, pale green, translucent, firm, thin skin, sweet, sprightly, pulp melting. Quality good. Season late.

BUSH FRUITS.

RASPBERRIES.

Quite a number of good raspberries have originated in Canada, but time forbids mentioning them here. Descriptions of these will be found in the list to be published later. There is one red raspberry, however, that must be referred to, namely the Herbert, which is rapidly making its mark.

HERBERT. (NO. 17.)

A chance seedling originating with Mr. R. B. Whyte, Ottawa, Ont., Canada, in 1887. One of thirty seedlings, probably of Clarke. A very

strong grower, hardy and very productive. Fruit large to very large, obtusely conical, bright to rather deep red; drupes medium size, not crumbling; moderately firm; sweet and subacid, sprightly, juicy and of good flavor; quality very good. Season begins a few days before Cuthbert. The best red raspberry tested at Ottawa. It has all the good points required in a berry for local market, being hardy, vigorous, productive, with fruit of large size, good color and very good quality. If firm enough for distant shipment it may displace Cuthbert.

Two excellent Canadian Black Caps are the Hilborn and Smith Giant.

CURRANTS.

There are several good red currants of Canadian origin, but the most improvement is found in the new black varieties originated by Dr. Wm. Saunders. In a bulletin on "Bush Fruits," recently published, we described sixteen of these which are now named. The best of them are Saunders, Kerry, Eclipse, Magnus, Clipper, Climax, Eagle and Topsy. Their value lies in their great productiveness and good quality. Most of them are seedlings of a seedling of Black Naples.

GOOSEBERRIES.

Two out of the three best American gooseberries were originated in Canada. These are Red Jacket, or Josselyn, as it is now called in the United States, and Pearl. The former is distinct from any other named sort, but the latter is apparently identical with Downing, although it is not so. Pearl has given better results at Ottawa than Downing. Both the Red Jacket and Pearl were originated by Dr. Wm. Saunders. The former is a cross between Downing and Ashton's Seedling, and the latter a cross between Houghton and Warrington. Several other seedlings not so productive as Pearl resemble it very much.

STRAWBERRIES.

There have been several strawberries of great merit originated in Canada. Of those in the trade at the present time the most noted is the Williams. Probably nine-tenths of the berries raised in the Niagara district are of this variety, which is of good size, very productive and firm. Its chief defect is a white tip.

These fragmentary notes will give some idea of the better known fruits which have originated in Canada. When our list is printed there will probably be in the neighborhood of five hundred varieties recorded. The number of good fruits from Canada will, we feel sure, be increased very much within the next twenty-five years, as many workers are now

in the field, and a close watch is also being kept for any new fruits of merit which may have originated by chance.

President Goodman: It is a surprise to me that probably five hundred fruits originated in Canada.

Mr. Patten: I would suggest that they revise their nomenclature of Red Jacket and call it the Josselyn. That will be in line with American practice, and will make it distinct so we shall know what we are talking about.

Professor Lazenby: I would like to ask on what ground are we to use the word "pippin" in connection with that very beautiful seedling of the Fameuse.

Mr. Macoun: The only reason is that the originator called it the "Scarlet Pippin."

President Goodman: [To Mr. Macoun.] You now belong to the American Pomological Society.

Mr. Macoun: I am willing to call it according to the nomenclature of the American Pomological Society.

PRESIDENT'S ADDRESS.

By L. A. Goodman, Kansas City, Mo.

Members and Friends:

The written law of the Society calls for a few statements from your President, but if it were not so, I should gladly avail myself of the occasion to say something to you at this the sixtieth year of its organization, and in this historic location.

First let me state my appreciation of the position as your president given me at the Kansas City gathering. For over twenty-five years we have been faithfully working for the advancement of horticulture in Missouri, and thus for the whole nation, though we have also undertaken active work outside of the State. We have known all of you well and have been co-operating with you all these years, for our cause was yours, and your work we made our own.

We wish to congratulate the members therefore on the wonderful progress that has been made during the sixty years of work and study, of energy and enthusiasm of this Society. It has been the leader of the nation in all its horticultural work. It has been the battery of electricity from which enthusiasm has vibrated to every part of our land. It has been the means of reaching and unifying and consolidating all the various state, district, county and local horticultural societies of this country, until they look to it as the source of inspiration for their work and ideals, as the final arbitrator of all puzzling questions. It has been the

work of this Society for years to build up a great department of pomology and horticulture at Washington, and as a result of this faithful work we now have the best Department of Pomology of any nation in the world. Nearly every state of the Union has built up its horticultural society and its fruit interests as a result of the enthusiasm and incentive furnished by this association.

The people will never understand nor appreciate the quiet educational influence exerted by this Society all over our land; the practical information it has disseminated; the wrong ideas, wrong practices, incorrect nomenclature, and poor varieties it has weeded out; the putting forward of the plea for better plans, the discovery of new diseases and new insects, as well as the best methods for combating them. And yet no other society has undertaken so much and no society has accomplished so much for the good of our people.

Historical—Here, then, where we now meet we are happy to congratulate you on your successful work,—here, right at the birth-place of the nation, 300 years ago. The first white man sent by Sir Walter Raleigh came here to Norfolk in 1585, seventy-five years before the landing at Plymouth, and at Cape Henry the English first disembarked in 1607. St. Paul's church was here built in 1739. The Summer Cheese apple was brought here in 1759. At Hampton we had the first free school in America. At Fortress Monroe we find the strongest fort in the world, except Gibraltar. At Yorktown we find the first Court House in the United States. Along James River we find the finest examples of Colonial architecture in America. At Yorktown occurred the last surrender to the Americans, you remember. Finally the peninsula between the James and York rivers has been the scene of more bloody conflicts than any spot in America. Meeting then on this historic ground, it is no wonder that we are proud of America, proud of our development, proud of our glorious country, its mountains, rivers, cities and towns, proud of our orchards and vineyards covering the beautiful hills and valleys, proud above all of our American Pomological Society, which has been so much the leader in all this. We meet thus of one mind, here in this beautiful land and glory with one another over what we now see before us, and more than all glory in the men of our nation who have made all such things possible.

Organization—In the summer of 1848 M. P. Wilder had a consultation with A. J. Downing in regard to the chaotic condition of our pomology, with the idea of establishing an American society, 'so that by interchange of experience and more cordial intercourse it would be possible by general consent to preserve valuable fruits, discard the worthless, correct nomenclature, and establish a pomology for our whole country.' A correspondence was opened with agricultural and horticultural

tural societies, with leading nurserymen and pomologists, and a call issued by a committee of fifteen to hold a "Great National Convention of Fruit Growers," in the city of New York. There on October 10th, 1848, the Society was organized as the "American Congress of Fruit Growers." But the first national pomological assemblage for the consideration of pomological subjects met in Buffalo on September 1st of the same year, at the call of the New York State Agricultural Society, and called itself "The North American Pomological Convention." A conference was held, and the next year consolidation of the two was effected under the name of "American Pomological Congress." The first united meeting was held at Cincinnati in 1850. In Philadelphia, 1852, the constitution and by-laws were formulated, and a new name adopted—"American Pomological Society."

Wilder was chosen president, and with his energy, happy influence and high purpose, honored himself and this Society in that office for forty years. Much had been done previous to this time, by the New York, Pennsylvania and Massachusetts Horticultural Societies—the leading pioneers of the East—as also by associations and individuals, in the way of co-operation, but here was a union for concerted action which should henceforward embrace every section of our constantly increasing territory. It was the first national society for pomological interests. In 1873 there were great commercial nurseries in Rochester, Geneva and other "western" cities—so called in 1873—but Wilder says, after outlining the history up to that time that "the impressive thought is the rapid progress in American pomology, the beneficial results which have arisen from the establishment of this national institution, and the duty of perpetuating, preserving, and protecting it for all coming time."

At the organization there were twelve states represented among the 100 members. Now there are 500 members, from forty states and fifteen countries. We have had thirty biennial and three extra sessions. The New York Society was organized in 1818, Pennsylvania and Massachusetts in 1828. Scholarships were and still are given in the New York Botanical Garden to young men who wished to make a study of this line. Such scholarships are also now given in the Missouri School of Botany for a similar purpose. Mr. J. J. Thomas says, "No other similar institution has attempted so much as this society, and no other has accomplished so much."

Discarding varieties is an important work, most necessary to save our people from impositions. In twenty-nine years there were 625 varieties of fruit rejected, and since then 1,000 more have been rejected. The work of seeking out synonyms is also part of this important division, and has been continued to this day. Ben Davis has seventeen synonyms, Buckingham twenty-four, Fallwater twenty-one, McAfee twenty-three.

Nickajack thirty-six, Rambo ten, Janet sixteen, Ortley twenty-seven, and Spitzenburg ten. These numbers certainly show how necessary this work was, and now is, to prevent fraud.

In 1873 also we find that President Wilder has the following to say on new fruits:

"As fine fruits can be raised from seed here as has been produced in other countries. Taste has been elevated so that fruits of indifferent or medium quality fall by the way, and we prefer those of a finer, higher standard. If the Bartlett pear has been produced, which is suited to every section, then another of like or better quality can be created and possess the same adaptation. Nor is there any reason why a strawberry like the Wilson or a grape like the Concord may not be raised of far better quality, and yet possess all the other valuable characteristics of these varieties. Formerly we relied on imported kinds for our best fruits, but now we have of twenty-three kinds of plums more than one-half American; of fifty-eight peaches, more than two-thirds American; of nineteen strawberries all but three are American; and the thirty-one varieties of grapes are all hardy and all American. As it was my first, so shall it be my continual and my last advice to 'plant the most mature and perfect seeds of the most hardy, vigorous and valuable varieties, and as a shorter process, assuring more certain and happy results, cross or hybridize your best fruits.'" In 1881 he remarks further: "Ninety per cent of our exported apples are Baldwin, but if we can get another with the color, the enduring strength and vitality, and ease of culture of that variety, combined with the greater refinement and delicacy of Northern Spy (and we can) it will be another invaluable acquisition. So long as we raise fruit to eat we can have no hesitation in giving first place to its eating qualities, second to durability, and third to size. I desire to see the quality of our fruits improved, and also to save the American Pomological Society from the reproach of recommending fruits, otherwise unworthy, because 'there is money in them.'"

Wilder gave \$10,000 to the Society for awards of medals, and the support of the Society. His ambition was to make this Society truly a national one. I wish we had more men who could give us \$10,000 each --yes, a hundred of them!

Thirty years ago root rot was discussed by Ragan, Downer and Flagg, and woolly aphis by Riley and others. In '71 Downing gave his influence in a large degree to the Society, and helped to discard many names because they were synonyms. At that time also the committee reported "Rules of Pomology and Nomenclature," which have been our guide all these years. In '73 Wilder put on exhibit 232 varieties of pears, and the next meeting he had 404 varieties. Then the Maryland Horticultural Society offered \$645 in premiums.

The meeting in '77 was held at Baltimore. Two hundred delegates went down to Captain Wilkins' home, fifty miles away by boat, where he had 1,000 acres in fruit, and there had dinner. Supper was served on the boat returning, and a banquet was given by the Maryland Horticultural Society.

Norfolk reports in '77 three million quarts of strawberries marketed.

In an article on pruning by Wm. Saunders in the report of the Department of Agriculture for 1879, I find the following question asked: "Does an apple, pear, plum, peach or other fruit tree ever require any pruning whatever, if the head is started at a point indicated by nature; or in other words, does a tree that has never been pruned or trimmed up any when planted in the orchard, ever require any pruning whatever (to give the best results); and if so, at what time in its life?" A committee had been appointed to answer this eight years before but did not report, and the correspondence was turned over to Saunders, who used it for partial basis for the following recommendations: (1). Prune at setting to secure somewhat the original co-relation between roots and branches. (2). Prune subsequently to increase vigor by removing weak branches; (3) to secure better shape; (4) to influence fruiting conditions by diminishing luxuriance of leaf buds and so increasing the production of fruit buds.

We find Thomas Meehan giving talks on scientific subjects, George Hussman on grapes, and George W. Campbell on hybrids. Robert Manning was awarded a Wilder medal for services, as also was Professor Beal of Michigan. The Missouri State Horticultural Society in '85 exhibited 211 plates of fruit and received a Wilder medal, as they did also at three or four other meetings.

POMOLOGICAL WORK IN THE STATES.

In New Hampshire in 1877 John Copp had had fifty years' experience in fruit culture and nursery business. Up to that time he had not failed to have a medium crop of apples for many years, especially summer and fall varieties.

"I have planted out a tree or two at least every season, and scarcely a spring has passed that I have not grafted over some one or more trees that I thought I could make more valuable. I would submit for consideration whether this yearly planting and grafting of trees does not tend more to the production of apples in years of general scarcity than the planting of many kinds at one time. I am more and more inclined to the opinion that here in this part of the country every person intending to plant an orchard had better raise his own trees. I do not recollect a season for twenty-nine years past that I could not furnish a dish of good apples at any time from early August to December."

"A very small part of the time and money spent in unprofitable, often objectionable or degrading amusements and around places of idle resort, will give every owner of even an acre or two, all the fruit needed for domestic use. One who has been indifferent to such things all his life will be astonished at himself for the interest he will feel in a few fruit trees or flowers, when once planted and beginning to flourish under his care. He will become fond of them before he knows it. A silent influence will be exerted without his being aware of it, refining his feelings and elevating his character. I can not well conceive how a person that is fond of the culture of fruits and flowers, and devotes a portion of his leisure to this, can possibly be a bad man.

The manner in which the fruit industry moved westward is shown by the following:

J. C. Plumb of Wisconsin, writes in 1877: "Under the stimulus of necessity and notoriety there is an increasing production or discovery of new seedling fruits in the Northwest that seems bound to create a pomology peculiar to this region."

In Montana Territory, 1877, Hon. W. E. Bass reports: "I have always taken a great interest in the matter of fruit growing in this county, (Missoula) and I believe I am the only one that has. There is no nursery, no practical horticulturist, most of the fruit trees we have here come by mail from the States,—a large part of them from B. M. Watson, Plymouth, Massachusetts. I hope we may be able to keep up our connection with the American Pomological Society; I think it may be of advantage to us in the way of introducing the fruit growing business into this country."

From Washington in 1877 we have the following from C. W. Lawton: "We can not send any fruit to Baltimore in September; our winter fruits do not mature until October, and there is no direct route for transportation. We could exhibit fruits that would astonish you by their size."

(Oregon, 1877). Henry Miller, who was part owner of the oldest and largest orchard in Oregon, wrote: "One year we shipped 10,000 boxes of apples. Most of the old trees were brought across the plains in wagons in 1847, and are now dead. The trees I set out twenty-seven years ago look old and stubby, but are bearing heavy crops yet, though perhaps will not much longer. Oregon can beat the world in apples, plums, cherries and quinces, and is only second in pears and prunes, and not to be excelled in small fruits."

(Pennsylvania, 1877). H. M. Engle says: "Failure to make a creditable show at the Centennial was not due to lack of fruits, but to want of proper organization. The Pennsylvania Fruit Growers' Society,

organized in 1860, has done much to stimulate fruit growing over a great extent."

Ohio in 1877 numbered her acres of fruit orchards as 400,000, and her crop in good years amounted to twenty million bushels.

North Carolina hauled her surplus to Tennessee, Georgia and South Carolina, for distances of 100 miles over rough roads, and commanded as much as \$5.00 per bushel.

Georgia's State Horticultural Society held its first session in 1876, and in a year several pomological clubs were formed in various counties.

Kentucky in 1879 knew that—"It will only be through the influence of local societies co-operating with the American Pomological Society that a change from the present feeling of indifference can be effected."

Mississippi in 1879 says: "We need yet state and county horticultural societies to collect and disseminate important facts in fruit culture, before the Fruit Committee can do this state justice in this line."

Dr. G. B. Loring, President of the New England Agricultural Society in 1873, said: "Agriculture, Horticulture, and Pomology—'United they stand, divided they fall.'"

This work has been done by such shining lights in pomology as the Downings, Wilders, Barrys, and others; they have made our wilderness to blossom with the apple. Gray, Hunnewell, Agassiz, Wilder, Sargent, Downing, and Warder are the seven great horticulturists of our nation.

F. R. Elliott of Ohio says: "The children from the far West, the sunny South, and the cold North have again acknowledged their parentage, and in their gathered allegiance are disposed to contribute knowledge of their expansive and erratic lives toward the grand interest which this Society inculcates. Twenty-five years hence our children will report and give to the world a record of value and instruction fourfold increase of that which the American Pomological Society now (1873) represents."

Kizo Tamari of Japan in 1885 mentions the horticultural progress in that kingdom as coming largely through American influence.

E. L. Sturtevant, Director of the New York Agricultural Experiment Station, in a paper of 1883 on "Systematic Improvements in Pomological Products," says, "The seed decreases as tenderness of pulp is attained. In nature the motive of the plant is seed; under domestication the motive is to minister to the desire of man."

President Wilder in 1883 refers to the Society as covering the entire continent, its importance and usefulness appreciated at home and abroad, and as ministering to the largest territory, with the most wonderful facilities for fruit culture on the globe. Protect, Preserve, and Perpetuate. Looking to the future he says, "Whose prophetic eye can survey

the grand expanse which is to open on our course during the next twenty-five years? Ere that time shall have arrived much of the unoccupied territory of our country, now greater in extent than that of all our present states, will by the aid of our trans-continental railroads be opened to cultivation; and Columbia River, Puget Sound and the whole Pacific Coast with its untold treasures be united with us in the great work of promoting the pomology of this land. Give us twenty-five years more, and from ocean to ocean, from the Dominion to the Gulf, our hillsides shall be clad with vines, our great valleys adorned with orchards and gardens, and the fig, olive, and orange of the South and the Pacific shores shall rival those of exotic growth. Give us twenty-five years more and our catalogues of fruits shall be filled with native varieties, and dedicated to American pomologists, who by their labors and benevolent efforts, have contributed to the wealth of our country and the happiness of our people. There is no limit to progress now or hereafter, and we believe that the fruits of this earth are to become more and more perfect as time advances. The march of science is ever onward and upward, and it is our duty to keep pace with it. What has been done, can be done again, and will be done until the final culmination of all created things."

How truly great and wonderful has been the advancement in horticultural lines during these last thirty years. One of our older people could today scarcely believe what he sees. Men now living in the central West can well remember when the shipment of fruits in a small way began, and now we see thousands upon thousands of carloads going to our markets from every part of our country—it makes us simply open our eyes in wonder and amazement at the enormous magnitude of this part of our industry. Every State has its colleges and Experiment Stations. Thousands of large fruit growers are continually testing. Orchards are spreading like wild fire. Men are studying every phase of the business. Markets are opening up in unheard of locations. Co-operation is being practiced in all our fruit growing localities. Systematic, conservative, careful, business-like methods are being used in the growing, the gathering, the packing, the marketing of our products, until we see that even the railroads and refrigerating car companies are taxed to their utmost to transport and market the vast products of our orchards.

This extract from the English Husbandman, printed in London in 1635, serves to show how it is better not to know so much, than to know so much that is not so. "Now, when you have made yourself perfect in the sowing, setting, planting and grafting trees, you shall then learne to know the effects, wonders and strange issues which doe proceed from many quaint notions and helps in grafting, as thus: If you will have peaches, cherries, apples, quinces, medlars, Damson or any other plumbs whatsoever to ripen early, as at least two months before the ordinary

time, and to continue at least a month longer than the accustomed course, you shall graft them upon a mulberry stock. And if you will have the fruits to taste like spice, with a certaine delicate perfume, you shall boil honey, the powder of cloves and soaxe, together, and being cold, annoynt the grafts therewith before you put them into the cleft. If you graft apples, peares or any fruit upon a fig tree stock, they will beare fruit without blooming. If you take an apple graft and a peare graft of like bignesse, and having cloven them, joyne them as one bodie in grafting, the fruit they bring forth will be halfe apple and halfe peare, and so likewise of all other fruits which are of contrary tastes and natures. If you graft any fruit tree or other tree upon the holly or upon the cypresse they will be greene, and keep their leaves the whole year, albeit the winter be never so bitter. If you graft either peach or plumbs, or any stone fruit upon a willow stock, the fruit which cometh of them will be without stones."

How like some of our false guides of to-day, who have a patent for all ills of the fruit tree, or the "only perfect fruit" (the old fruit under a new name) which will make the planter rich. These people in 1635 were in error, but the patent-right propagator and cure-alls are swindlers and cheats of the worst sort.

Day by day we find our expert scientists, our investigators, our experimenters, our practical fruit growers, our Agricultural Colleges helping to settle our difficulties and settle them right. Professor William Scott of the U. S. Department of Agriculture has settled the bitter-rot, and Professor Forbes, the value of birds. Others have found the cure for apple scab and apple blotch, and means for the destruction of the black rot in the peach and the brown rot in the grape; so that if we now understand our horticultural doctors, we can grow fruit perfectly, contingent only upon the weather conditions. Has the end verily come yet?

The Central West. Sixty-seven years before the landing at Jamestown, and eighty years before the Pilgrim Fathers, and only fifty years after the discovery of America, we find the first white man (Spanish) putting foot on Missouri soil. Two hundred years later the French took possession. In 1812 Missouri was admitted as a Territory and in 1821 as a State,—the 13th after the original thirteen (proving the folly of calling "13" unlucky). The wonderful development of this section has been due to three natural causes: 1. Geographical (locality, markets, etc.) 2. Geological (the soils, etc.) 3. Climatic (rains, etc.); and to two artificial causes: 1. Men; 2. Work. These two began in 1735, 170 years ago, and extended as far as Kansas City seventy years ago. Under the leadership and influence of some of the members of the American Pomological Society, the Missouri State Horticultural Society was organized in 1859, and has continued its existence unto this day.

The influence of this national society is felt among the fifty-seven local societies of our State.

Exhibitions, planting large orchards, advertising our possibilities, establishing great agricultural colleges and stations, the writings of practical fruit men, the entire change of plan of orcharding, the failure of the best eastern varieties in the West, different methods of pruning—all have tended to make this Central West a wonder of the world in its capability, adaptability, possibility, and financial ability.

Fruits and Nuts as Food—May I call your attention to the novel and instructive, if not practical, paper published in the Report of the Royal Horticultural Society of London, and written by Dr. Josiah Oldfield, giving the practice at his sanitarium in the use of fruits and nuts. His claims are that all the foods men need are fruits and nuts, and reasons therefor are made plain. If this plan were adopted by many of the people, we should find a wonderfully increased demand for all our fruits. I commend the article to your perusal.

Uniform Packages—These should be adopted by all states, and the horticultural societies are the ones to push the work. I can only call this to your attention and urge pressing it to a final conclusion.

Grades of Fruit—This is another such important subject, that we shall gladly hail the happy day when we shall know what is meant by the terms "No. 1," "No. 2" and "No. 3." Gradually we are nearing this end; if we continue to press on we shall soon reach the desired goal.

Denatured Alcohol—This question will come up for solution by our fruit men as well as our vegetable growers and grain men. We are glad to note that our scientists are studying the matter closely, and will soon find a way of making it cheaply for the farmers' use.

New Fruits—These are always interesting if not truly valuable. But many of them are valuable, and it is a question of adaptability to soil, location, climate and elevation. Very few of these new fruits have come to my hand, but have gone directly to the Committee, and will be reported on at the proper time. I will mention here only the wonderfully large strawberry shown at St. Louis and called the "St. Louis," which together with the "Outlander" and the "Goldsborough" were originated by Arthur T. Goldsborough, Wesley Heights, Washington, D. C.

The Lot of the Horticulturist—I know of no rich men among them all, but I do know a lot of happy, contented, moral, delightful, agreeable, and above all else hopeful people among them. The prayer "Give neither riches nor poverty" has been truly fulfilled in the class of fruit growers. I believe that we can all say that we have had more of pleasure than sadness, more of happiness than sorrow, more of success than failure, more of the sweet than of the bitter; that we have lived among the best people, had more friends, enjoyed more association,

visited and had more good times, discussed and enjoyed our business better, and had more good fruits to eat, than any people on earth; and consequently we are the happiest even if we do often fail in a fruit crop. Nature, as we live close to her, always has something new to tell us, or something always to interest us. Failure of our crop is no failure of Nature; it is just as much Nature's work to take care of the insects and fungi which destroy our crops, as it is to help us grow good fruit. Nature is always busy just the same in taking care of her own; and whenever our fruit, grain, or trees, whenever insects or fungi become too self-important and attempt to overshadow everything else, behold Nature steps in, and sends some parasite for the insect, some fungus for the fruit or grain, some microbe for the animal, and evens up the inequality, so that things become normal once more. Nature gains, whoever loses. The only thing for us is to do our best, give full measure, be not weary in well doing, and reward will come in due time if we faint not.

Our Success—The success of the Society depends wholly and entirely upon the uniting of the influence of every member for the growth of the Society. This Society has been a power and influence for the glory of horticulturists because of this uniting of the members for the good of all. All selfishness must be banished if success is to be ours. As I have often told our State Society, just so long as we could keep selfishness out of it and have a unity of ideas and work, and above all of men, just so long would we be a power in the land, and no longer. I bespeak for you, therefore, this unity of spirit and work, that will insure certain success and power. With this as our motto—"Unity in all our work, giving our hearts, minds, and strength for the honor and glory of the American Pomological Society"—we shall progress to higher and broader and nobler achievements than ever before.

Secretary Craig: We have heard an exceedingly interesting and valuable address. There are a number of points in that address which I think ought to be considered and acted upon by the Society. It seems to me wise and fitting that a committee should be appointed to consider the President's address and report upon it at a later session of this Society. I move therefore that such a committee be appointed,—a committee of three on the President's address.

The foregoing motion was put to vote by Mr. Brackett and carried, and Mr. Brackett appointed the following committee: Mr. Taylor, Professor Beach and Mr. Patten.

President Goodman: If we go on that excursion tomorrow afternoon, we must hold a session to-night at the Inside Inn, and we will

meet there at half-after-seven. I will say to the Vice-Presidents that we want you to meet between now and two o'clock if possible, and attend to the matters that are to come before you.

WEDNESDAY AFTERNOON SESSION.

The meeting was called to order by President Goodman, who turned it over to the Society for Horticultural Science while Professor H. J. Webber read a paper on the importance of bud variations and mutations in the development of citrus varieties.

President H. St. George Tucker of the Jamestown Exposition Company was then introduced to the Society.

President Tucker: Gentlemen of the American Pomological Society,—I regretted very much that I was not able to meet you yesterday, but with all respect to your great Society, it is the truth for me to say that here at the Jamestown Exposition you are not the only pebble on the beach. We have a great many societies meeting here, three or four a day, and I was unable to get here on yesterday, but I was unwilling for your Society to meet here without my coming to express the great gratification that we have in having so distinguished a body of men representing so many States of the Union and foreign countries here within our gates.

I have always loved that prayer in the Episcopal service, "For the kindly fruits of the earth, so that in due season we may enjoy them." I see that you love that prayer also; your organization is an admitted answer to that prayer. I wish I knew something about apples and pears. I know something about "pairs."—I have one pair at home—and I am prepared to say that no house is properly furnished without a pair of twins. But as I look at the beautiful exhibit that you have here, I wonder if our first parents were subjected to such a temptation as that which you have before you to-day. If so, I do not wonder that they fell.

You know I come from Virginia. We Virginians—Woods is one of them—we used to think,—possibly I ought not to say it, but still I am going to, because frankness is best,—you know we think we have got things just a little better in the State of Virginia than anywhere else. As a matter of fact, probably we have not, but there is one thing we think we have got in Virginia that is just a little better than anything else, and that is a soil that will produce the best apples in the world, the Albemarle Pippin. I do not know whether the distinguished professor before you will teach you how to make a soil that will make the Albemarle Pippin or not, but we think it is the best apple in the world.

Now, gentlemen, you are one of many societies that are meeting here day by day, that make this Exposition one of extreme interest to the people of the country. As we see the men of marked power, of genius and of work that are taking hold of some of these things in our country, and working them out to their perfection as you are doing, we feel that the progress of America in the three hundred years is one that every American can be proud of, and every patriot. Why, what would not Captain John Smith, when he landed across these waters here, have given to have had the American Pomological Society there to have told him how to produce good grapes out of the sour grapes, and Albemarle Pippins and Winesaps out of the wild fruit that was growing in the forest. You are one of the great instrumentalities of our country, that God is making us love at home and revere abroad.

This American people has peculiar ways of doing things. I have never known a people that seemed to know what they wanted and went for it and did it, as our people. I was out at a great congress last summer at Boise City. Speaking of fruit,—some here are from Idaho probably,—I thought in Virginia we have the best fruit in the world, but I have been to Boise City, and—Woods, don't tell on me!—they had the best fruit in the world, and I have been in California, too. In Boise City I saw a great congress of over 1,200 delegates, an Irrigation Congress. It produced a tremendous effect on me, traveling for two days across an arid plain, to see 1,200 men gathered there, of brain and brawn and muscle and determination. They produced upon me the inevitable conclusion, that whatever seemed to be the probabilities, those men were going to rescue that desert and bring it to the uses of mankind by irrigation. This American people have a way of doing that. The great work which you have before you to-day is one of the great elements of our progress.

By the way, I just received notice yesterday that the San Jose scale was in my orchard, and so I have come here to throw myself on your mercy and to ask you how to get it out.

A Member: It is dead easy!

Mr. Tucker: Good for you! That is it, it is dead easy to the man that knows, but I do not know, and that is what you are here for, to teach me. I am going to learn about it, for I am determined that the San Jose scale shall not conquer my orchard if I can help it.

Now, my friends, your time is valuable and so is mine. I want to express on the part of the Exposition Company the great pleasure that we have in having you here. We think we have a great Exposition, though not like Chicago or St. Louis; we are not so ambitious, and we are not so ambitious because we did not have the money; but I want you as American citizens gathered here around these old patriotic altars,

right here at the birth of the American nation, which was cradled upon our Virginia Nile and nursed by the daughter of the king, Virginia,— I want you while you are here to go through these grounds and see what has been done by these slow, sleepy, old Virginia people to signalize and celebrate the birth not only of the American Republic, but of the old Commonwealth, the mother of us all. You will find probably not as handsome exhibits as you have seen elsewhere, but I want to say to you, my friends, that in building this Exposition, we have made more bricks without straw than any people since the days of the Children of Israel in Egypt. We have done it because it was a work of love; we have done it in order to inculcate into the minds and hearts of the American people a love of our own history; for be it remembered, that no people will ever have a future history worth having that does not study and learn its past history. The men that landed here, the founders of this nation, brought with them two great principles, the principles of civil liberty and religious freedom, and by just so much as the people of America live up to those great principles, will our future history be worth preserving. We have as a cardinal principle of this Exposition, therefore, not so much these buildings, though they are beautiful, and the exhibits, though they are valuable and interesting, but the cardinal principle—the idea of the men that established it and brought it to its present perfection—was to create in the hearts of the American people a deeper love of country, a deeper sympathy with each other, and a broader and a more enlightened patriotism among all our people. And, gentlemen of this Society, by your gathering here and mingling with the people from all over the country, we can hope to have those principles strengthened and broadened in your hearts. You will do much to carry into effective work the great object of this celebration.

And now, with my best wishes for the success of your Society, and the destruction of the San Jose scale in my orchard, by reason of my association with you and with my assurance that it will be a great pleasure to me if I can be of any service, or the Exposition can be, in adding to your pleasure or your comfort while you are here, I bid you God speed in your work and a pleasant and happy stay within these gates. (Applause.)

President Brackett (in behalf of the Society for Horticultural Science): I know that you will concur with me in expressing hearty appreciation of the words spoken by Mr. Tucker, and that we most heartily tender to him our sincere thanks for the hearty welcome he has given us and the cordial words that he has spoken.

The paper that was just read was interrupted by this ceremony, and we will now give you an opportunity to discuss the paper of Dr.

Webber, but we want you to be very brief, because we wish to hasten on as rapidly as possible.

Professor Lazenby: There was one point that struck me particularly, and that was the explanation of the sterility. Now, many years ago the question of hybridization was being discussed in our colleges and experiment stations, and some tests were made. At our institution we effected some crosses very successfully with the peach and cherry, both sweet cherry and sour cherry. The pollination was successful in every instance, but with the seeds the results were sterility, and we could not account for it. Now I think we are getting something of a clue, and it was very interesting to me to hear this part of Dr. Webber's paper.

Mr. Munson (of Texas): I was intensely interested in one statement in reference to the action or effect of chemicals in causing sterility to disappear, or to produce fruit by using chemicals. Some years ago I produced forty odd different varieties of hybrid plums with peach. A Wild Goose plum tree stood alone, that is, not near any plum trees, but surrounded by peach trees, and it bore heavily. Now, the question I wish to ask is this,—would it be possible, as I am rather inclined to infer from what the Doctor said, that by taking some one of these trees and applying the chemicals to the stamens, we could get fruit from such a tree, and that by planting that seed we could get a sort of these hybrid stocks that would reproduce themselves. If we could only get that combination of plum and fig, I think it would be an addition of immense value to our list of fruits. I wish to hear the Doctor's opinion with reference to that.

Dr. Webber: Unfortunately, the gentleman has introduced another subject, which is different from the one I mentioned. The use of chemicals in the instance which I cited, was in stimulating the production of mutations, not necessarily connected with hybridization. It would seem possible, however, reverting to the case which Mr. Munson cites, that we might be able to find some chemical that would stimulate fertility, and one of the lines of experiment which I had expected to undertake was the injection possibly of some of these chemicals into sterile plums, or sterile hybrids of this kind. Considering the researches of Loeb in Chicago, which are known probably to every one in this audience, it would seem possible that we might stimulate fertility, and of course in those cases where we have a hybrid, all we want is a seed. We do not care whether it reproduces the same thing or not. What we want is to get the chance of working with it, and if we can get it to produce seed in any way by chemical stimulation, it seems to me it would be a very desirable thing to do. If we are dealing with a fruit like the orange, and stimulate development by chemical injection, we would probably be stimulating the development of polyembryonic individuals or false

hybrids. We would be developing the embryos which would be like the mother, unless they should be influenced by the chemical.

Another suggestion has come in here which might be of interest to pomologists. In the experiments which I made with oranges I found a tendency to develop fruit without pollination, and when they are not pollinated they are seedless. The navel orange is seedless, because it not pollinated. Even when pollen is applied to the pistil no seeds may be formed, as fecundation does not take place unless the tissue at the apex of the pistil is broken. If we break the tissue, which because of abnormal development closes the pollen conductive tubes, and allow the pollen to enter, it causes fecundation, and we have a navel which is seedy, like the common orange. That experience has led me to question whether we might not find a chemical, or some mechanical substance with which we could spray a peach or orange tree and cause the mechanical irritation necessary to the development of fruit, without allowing fecundation to take place, and thereby raise a seedless fruit. Now, this seems purely theoretical or visionary. Yet, take the case of grapes, the small seedless fruits commonly found in clusters of certain varieties are fruits which are probably not fertilized at all, but develop just the same. We know the pineapple develops commonly without pollination, but that when pollinated they develop seed.

CONTROL OF PEAR BLIGHT ON THE PACIFIC COAST.

By Mr. M. B. Waite, U. S. Bureau of Plant Industry.

[Mr. Waite spoke from notes. He engaged to furnish the Secretary with a paper, but failed to do so.]

DISCUSSION.

Mr. Davidson: I would like to ask what is the best time of the year to cut out the blight, the best method of disinfecting the tools, and the best way to paint the wounds.

Mr. Waite: The best time of the year ordinarily is in the fall, if you are only going to do it at one time of the year. The main purpose, however, is to cut the blight thoroughly out of the tree before the blossoms open in the spring, so you can do that work at various times during the winter, especially the mild winter of California. The last time is just before they blossom. That is not meant to discourage you in the summer from cutting out the shoots; but to answer your question definitely, the best time is in the fall of the year.

The next question was the disinfection. We have tried numerous mixtures, and taking all into consideration, including your own hands and everything else, the best is one-to-one-thousand corrosive sublimate solution. You can buy tablets at the drugstore, one of which dissolved in a

quart of water will give you the proper strength, so you can carry a one-quart flask, and add water when required. A disinfectant, however, should always be used carefully in regard to inserting metals into it. If you put your disinfectant into a tin can, as lots of Chinamen were doing, it will take the tin off. Use a clean bottle and use clean water. We had a lot of alkali water that precipitated our disinfectant. A glass bottle is all right, with a cork, but get clean water if you can.

The next question is, how to paint the wound. White lead is the best thing for this purpose, as a rule. It is a wise thing to paint the wounds within a few days after having made them. Dry out and examine the wound, that is, where you are doing a specially fine piece of surgery, to make sure before painting that you have all the blight out, and then paint with white lead paint. White lead and pure linseed oil is best.

Professor Lazenby: Mr. Waite spoke of the possibility of using practically immune stocks, and budding or grafting on them. How is that?

Mr. Waite: I am giving you these things in advance. I am working on that problem and have not got it settled. We have been working on a hardy tree, and considering the possibility of growing it. The Keiffer is a thoroughly resistant variety, but we are not certain that we dare use it, because the top grafting of the Keiffer with the Bartlett is not well settled.

Mr. Dutcher: How often do you find it necessary to disinfect the tools while at work?

Mr. Waite: Continually. Generally after we have cut a limb out we disinfect the tools.

Mr. Hood: I would like to ask Professor Waite if what is known as the "twig blight" of the apple is the same as the pear blight?

Mr. Waite: Yes.

Mr. Hood: That is only on the top, it does not run down.

Mr. Waite: I saw some bad cases in Pennsylvania where it did run down the trees.

Mr. Macoun: In our experience in regard to blight affecting apple trees, which has been rather wide, we found that the blight is most severe on the Russian apples and apples of Russian origin; in some cases trees have been entirely destroyed by it; and I was wondering whether it was not possible that this blight,—this apple blight particularly, for there is a form differing from pear blight,—had been introduced from Russia.

Mr. Waite: That is just why it affects the Russian apples first, because it is not found in Russia.

Mr. Macoun: You made the statement that the tender varieties were most affected.

Mr. Waite: I call them tender, meaning not their resistance to cold, only tender with regard to the blight.

Mr. Patten: I believe we have a pear stock from the North that would be valuable. It is a Chinese sand pear, and in twenty-five years I have never seen a particle of blight on it, and it is as hardy as an oak. I am sure that that stock should be given thorough trial.

Mr. Waite: I would like to say that I would be very glad to have such things called to my attention, because that is the line we shall have to work on the next five years or more, and I shall be very glad to have any hardy stock called to my attention.

President Brackett (in behalf of the Society for Horticultural Science): The Society for Horticultural Science will now listen, in connection with the American Pomological Society to a paper by Professor Hedrick on "Mendelian Characters of Tomatoes."

Following the reading of the paper came the ensuing discussion.

Dr. Webber: We have heard a great deal about Mendelian law in our societies here and all over the country. It is becoming one of the very important subjects of discussion, but few of us really know anything about it. I have been asked dozens of times whether Mendel's law could really be put in practical use. We have here in this paper of Professor Hedrick an indication of what practical value the Mendelian law probably may be. Bevin's work in England, where he has been able to disseminate a grain resistant to rust, very clearly shows us another important place where it is of practical value. I want to bring out here that this is one of the best illustrations of the real value of all scientific work. Under our Adams' Act we are required to do scientific work in the Experiment Stations, and we are going to be questioned—the stations are going to be questioned time and again—of what value is the work you are doing? The tendency of the practical men all over the country is to ask the Stations if they are doing breeding work to modify a certain variety to fit it to their conditions. Now I want to ask you, is it of more value for the Experiment Station man to try to modify and produce a new variety, or is it of greater value to try to find out the means by which you can do it yourself? I conceive that it is of more practical value, that it is of the greatest value, for the Experiment Station man to try to find out the scientific principle and put in the hands of the practical man the scientific principle with which he can work. That is the value of the Adams' Act, and we are going to try to carry it out as far as we can.

Mr. McCue: I have some of the tomatoes of the second generation of hybrids of the cross of Dwarf and Livingston that I raised in

Delaware this year, and the hybrids have shown another peculiarity, in that they are not as susceptible to tomato blight as the Livingston.

Mr. Munson: It strikes me that the Mendelian law in many of its aspects, especially when we compound hybrids, becomes so complex, and its causes are mixed up so much with other causes, that it is of secondary importance. I have found in my work that it is very excellent for tracing, for finding out the parentage of certain varieties by reversion; but suppose that we make a hybrid by crossing A and B and call that X, and another by crossing C and D and call that Y. Then make a hybrid between X and Y, continue to breed from it according to this law, and there will be constant reversion in four directions in their right proportion until finally you get back into four lines A, B, C and D, and X and Y will disappear by our constant in-and-in breeding from the pure seed of the hybrid. It is beneficial so far as the simple hybrid is concerned, but suppose we continue to complex that unit X-Y-Z, etc., and then try to get back into the pure line, I think the other influences that tend to cause this saltation or mutation enter into the problem, and we would get such a complex set of cells that we could not be certain in tracing back to any great extent: We can therefore work in the Mendelian law only with simple hybridization to any great advantage.

Professor Hedrick: In this case the characters were not so complex but that they could be traced out, if but we cared to compound them, and we have in the short table that I read you a combination of all the characters present.

Without taking more time, I just want to make the prediction that from the work with tomato and with lettuce and with one or two other vegetables, that so far as vegetable breeding is concerned, the time is not far distant when every vegetable breeder will make use of the Mendelian law, and can predict and make use of it to an end that will enable him to bring into existence whatever combinations of characters he wishes. I make the prediction that the practical growers, the practical producers of new varieties, the seedsmen, will be bringing new varieties into existence through the use of Mendel's law before many years. I feel sure of it.

President Goodman: Do you mean to say that if I want a type of tomato bred to a certain ideal, that you can breed the type to that ideal?

Professor Hedrick: I mean to say, Mr. President, that if you have two parents with all the characters that you wish, that you can get a combination of them through Mendel's law.

President Goodman: I did not mean that; but suppose I want a tomato of a certain class, can I ask you to select a certain type and breed up to that?

Professor Hedrick: If I can find that character in some other tomato, I will get it. I cannot get something that does not exist in the species.

President Goodman: That is the point. That is a good answer.

I will now call for the Treasurer's Report.

TREASURER'S REPORT.

Agricultural College, Michigan,

September 18, 1907.

L. R. TAFT, Treasurer,

In account with the American Pomological Society.

Dr. to receipts as follows:

Sept. 16, 1905.	To Cash on hand.....	\$1,014.06	
Sept. 16, 1907.	To Interest on Bonds.....	400.00	
Sept. 16, 1907.	To 12 Life Memberships.....	240.00	
Sept. 16, 1907.	To sales of "Proceedings".....	10.00	
Sept. 16, 1907.	To 269 Biennial Memberships.....	537.95	
		<hr/>	
	Total Receipts.....	\$2,202.01	\$2,202.01
		<hr/>	

Total receipts less cash on hand..\$1,187.95

Cr. to cash paid out as follows:

Sept. 16, 1907.	Expenses of Secretary's office....	\$187.92	
Sept. 16, 1907.	Expenses of Treasurer's office....	51.53	
Sept. 16, 1907.	Expenses of President's office....	4.00	
Sept. 16, 1907.	Salary of Secretary 2 years.....	200.00	
Sept. 16, 1907.	Cost of "Proceedings," etc.....	727.81	
Sept. 16, 1907.	Cost of Wilder Medals.....	38.52	
		<hr/>	
	Total Payments.....	\$1,209.78	
	Cash on hand.....	992.23	
		<hr/>	
		\$2,202.01	\$2,202.01

Respectfully submitted,

L. R. TAFT, Treasurer.

Payments in full Sept. 16, 1905 to Sept. 16, 1907.

Sept. 20, 1905.	John Craig, postage.....	\$23.60
Sept. 20, 1905.	S. A. Beach, postage and printing.....	3.50
Oct. 5, 1905.	W. F. Humphrey, printing Special Report....	146.30
Oct. 5, 1905.	Whitehead & Hoag Company, badges.....	11.40
Oct. 14, 1905.	Ithaca Publishing Company, program.....	10.00
Oct. 14, 1905.	Miss E. Jacobson, reporting proceedings.....	89.00
Oct. 14, 1905.	H. H. Whetzel, 1-2 expense to Kansas City....	27.80
Oct. 14, 1905.	Fletcher Bros. Co., cuts for report..	8.00
Oct. 14, 1905.	John Craig, printing and postage.....	10.87
Mar. 19, 1906.	Peter L. Krider Co., medals.....	38.52
Mar. 19, 1906.	Norton Publishing Co., printing circulars.....	3.25
Mar. 19, 1906.	John Craig, postage.....	10.00
Mar. 19, 1906.	Crotty Bros., one ledger.....	1.25
June 9, 1906.	Gratiot Co. Journal, letterheads.....	4.00
June 19, 1906.	Chas. H. Wise, printing.....	9.25
June 19, 1906.	Austin Engraving Co., cuts.....	32.01
Oct. 1, 1906.	John Craig, salary as secretary.....	100.00
Oct. 1, 1906.	John Craig, postage.....	35.00
Oct. 1, 1906.	Ithaca Printing Co., printing "Proceedings"..	417.00
Oct. 1, 1906.	Thos. G. Miller, envelopes.....	4.20
Nov. 19, 1906.	Andrus & Church, printing.....	4.75
Nov. 19, 1906.	John Craig, postage.....	10.90
Dec. 19, 1906.	John Craig, expenses to Norfolk.....	39.00
July 2, 1907.	Andrus & Church, printing.....	7.75
Aug. 12, 1907.	John Craig, postage.....	12.15
Aug. 12, 1907.	Scotford Stamp & Stationery Co., printing....	4.00
Aug. 20, 1907.	L. R. Taft, printing, postage, etc.....	18.20
Sept. 9, 1907.	Lawrence & VanBuren Printing Co.....	16.50
Sept. 16, 1907.	John Craig, salary as secretary.....	100.00
Sept. 16, 1907.	L. R. Taft, postage & exchange.....	11.58
Total Payments for 1905-07.....		\$1,209.78

Agricultural College, Michigan,
September 16, 1907.

L. R. TAFT, Treasurer.

President Goodman: This report of the Treasurer will go to the Chairman of the Auditing Committee.

Mr. Dutcher: We have already examined the books and papers, and the committee is now ready to report.

President Goodman: We will have the report now.

Mr. Dutcher: Having carefully examined the books and vouchers submitted by the Treasurer, we are glad to report that we find the same correct in every particular. With the permission of the Chair, I would like to state for the benefit of the entire body that we find those books so clear, so plain, so easily understood, and so accurately kept, that any one who wants to investigate them need not call in the assistance of an expert.

On motion, the report of the Auditing Committee was adopted.

President Goodman: I will take just a moment to call on Brother Strong, an old member of this Society,—probably for fifty years, I do not know how long,—but we are glad to see him and welcome him. I would like to have him come forward and give us a word at this time, I know you will all be glad to see him.

Mr. Strong: It was a matter of doubt whether I would be here. I am old enough to stay at home, but I am glad that I came. It has been a delight to me to meet some of the old members, though not as old as I am, I think. I have the impression that I am the oldest member of the Society. I am not a charter member, but I was almost one. It was in the very early days of Mr. Wilder that I joined the Society, and it has been a delight to me to take the hand of some of these older members once more. I said to my family that it would be the last time I should meet you on this side, but I hope to meet you on the other side. I can hardly expect to meet you here again, for I am over eighty-four years old.

President Goodman: Mr. Strong, will you take the hand of Mr. Brackett; this is President Wilder's mode of reception. (All the members joined hands in a circle). All together! We are glad to see you again! Col. Brackett, eighty years—Mr. Strong, eighty-four years.

The next paper that we shall have this afternoon will be by Mr. Patten, whom you will be glad to hear.

DEDUCTIONS FROM EXPERIMENTS IN BREEDING ORCHARD FRUITS FOR THE UPPER MISSISSIPPI VALLEY.

Charles G. Patten, Charles City, Iowa.

The climate of my region is so unlike the climate of any other portion of the United States that if it ever has a horticulture worthy of its magnificent agricultural possibilities, it must be made. To emphasize this thought it needs only to be stated that the Baldwin, Rhode Island *Greening*, Spitzenburg and Newtown *Pippin* are wholly worthless in tree over an area of some 700 miles north and south, and 1,200 miles east

and west between the lakes and mountains; and that such varieties as the Fameuse, Golden *Russet*, Perry *Russet*, Tolman *Sweet* and Northern Spy are only partially successful in a very limited area on the eastern and south eastern border of this district. The same statement is true of every commercial pear, of every *Domestica* and Japan plum, and of every cultivated cherry. The Early Richmond cherry leads all others in its partial adaptation to the southern and eastern border of this valley.

But it is already proven that fruits can be adapted to this inter-continental region by breeding. One of the most serious obstacles to the adaptation of varieties is the early maturity and premature dropping of the eastern and Russian apples, especially the latter. If a fruit will not hang to the tree until it will mature, its value either for home or market is greatly decreased. By breeding from those sorts that hang most firmly to the tree we can improve upon this quality. The speaker has produced from the Transcendent Crab a fruit of fair quality and larger in size than the parent, that clings to the tree during any ordinary gale of wind until it is fully ripe. The tree is now 45 feet in height and is still in vigorous growth. He has also originated a seedling of the Malinda, a winter apple that will cling to the tree, an apple that is larger than the Baldwin, of fine form and color, of good quality, and that has scarcely dropped an apple up to this writing, September 20th. Besides these are several other winter apples that can only be alluded to at this writing.

In connection with originating winter apples for this region another factor is of such importance that we must not fail to consider it. The past summer has been one of long continued low temperatures. Heated periods have been few and mostly brief, so that our apples have matured slowly. The heated term that usually begins about August 25th did not appear until the 17th of September, fully two weeks later than usual. Hence the slow process of ripening has left an impression on the germs of the fruit of the past season such as is rarely produced in our climate. Seasons of equally low temperature do not occur oftener than once in ten to sixteen years, and are the only ones to rely on for originating long keeping apples. The early heated periods that are usual to our summers ripen the germs of our fruits with such rapidity that they cannot produce winter apples. Hence the necessity of saving the seeds grown in a season like the one that is just closing. The fruit is not only firmer than usual, but the abundant moisture has given to many sorts a higher quality than can be produced in dry, hot summers. It would be a most interesting and valuable lesson in originating the highest quality in apples, as well as other fruits, if we could know the climatic conditions that existed during the seasons that produced the seeds

from which originated the Newtown *Pippin*, English Golden *Russet*, Spitzenburg, Grimes *Golden* and Jonathan apples. Possibly the ashes that sweetened the soil where once burned some log-heaps in the forests of our ancestors, have to do with the high qualities of these fruits, supplemented also by a season having ideal climatic conditions for producing the highest quality. For as is well known, in some seasons any given variety of fruit will be far more perfect as well as of much higher quality than in another year. Fruits representing such a high standard of perfection must have had ideal conditions for development, and we think that we have suggested the cause of their origin.

A close study of the characteristics of plants and the blending of their most desirable qualities through cross-breeding and selection will insure success. Unlikeness there will be in a mixed heredity, but the dominant characters will frequently repeat themselves in their offspring. For instance, Siberian and Oldenburg seedlings are generally more hardy than are the seedlings of eastern or southern sorts, because they were bred in a more northern climate. Heredity must be reckoned with everywhere if we make any reasonable advance. If we wished to produce only red in apples, we would not fail if we bred the Ben Davis and Fameuse, because this quality is inherent in both of them; and we would scarcely fail of producing a large proportion of red apples if we planted the uncrossed seed of either. Red is a dominant color, and is especially dominant through the pollenizing parent. In fact, long observation of selected and cross-bred apples has led me to the conclusion that the pollen-bearing parent largely predominates in fixing color in the new fruits, whether the pollenizer be green, yellow or red.

[Here Mr. Patten interjected: At this point I wish to make a remark with reference to what I said yesterday about the influence of parentage in fixing the character of the tree and color. I wish to correct the thought possibly entertained that this would always under all experiments be true; yet my observation, as I have said, leads me to believe that the pollenizing parent not only fixes the form and color to a very large degree in the fruit, but also fixes the form in the tree as well. Carrying this thought further, I have in mind using the pollen of an upright tree on a tree quite similar to the Jonathan, very drooping in habit, with very slender twigs, and in ten crossings of that kind not one single one of them represents the mother-tree in any particular so far as the form of tree and branches is concerned.]

It is now thirty-nine years since a definite effort was begun here to adapt apples to this Upper Mississippi Valley, or what is more commonly known as the Northwest; and sixteen years since cross-pollination has been employed. Almost from the beginning it developed that

size, beauty and productiveness could be produced in a large proportion by combining those varieties which most nearly approached our ideal apple, and that small and inferior apples could be largely eliminated from the product.

A group or family of sweet apples has been produced in the second generation of crosses. This group was bred up from a cross of the Bailey Sweet on the small Red Siberian, producing the Briars *Sweet Crab*. The latter crossed with the Pound *Sweet* has given from seven seedlings—all that have borne—only sweet apples. Two of them are nearly as large as the Pound *Sweet*, and resemble it in color and form, being also of excellent quality; while two others are of such quality as to be worthy of cultivation.

I know no reason why size, color, quality and acidity cannot be produced in other groups. In fact, by combining a proper selection of varieties having resistant leaves, good form of tree, and a natural healthy bark, added to the hardiness or adaptation that fit them to the varying climatic requirements of different sections of this valley, the most tangible and gratifying results have been produced. One apple alone has been originated here, the Patten Greening, that has added hundreds of thousands of dollars to the wealth of the northern portion of this district, and on account of its superior hardiness and early and abundant bearing of large sized commercial apples, it will no doubt still add greatly through its descendants to the wealth of this region.

We have demonstrated conclusively that trees can be originated for this climate that are more hardy than either parent. For instance, we have a Jonathan crossed with Ben Davis, a very good apple that is more hardy than either parent. Also a pure Ben Davis seedling that is twenty per cent more hardy than the parent. Still another seedling of Ben Davis seems even more hardy than the Oldenburg, which bears a beautiful sweet apple. Also we have an apparently pure Fall Orange seedling which is nearly the equal of its parent in quality, but larger and more uniform in size, and in tree fully twenty-five per cent more hardy. There is no question that in many cases climate produces a better constitution in the cross-bred tree than is represented by either of its parents.

A considerable number of trees that were produced some six years ago by cross-breeding, strongly confirm the opinion that the pollenizing parent dominates to a noticeable extent in the form of the new trees. If this shall prove true, which I believe, it will add immensely to the value of our future orchards. The conviction has been steadily growing with me that great care should be taken in the selection and preparation of the pollen that is to produce improved fruits. If the experiments that

have been made by scientific men in the breeding of plants proves anything, it is that the pollen taken from another plant of the same family gives increased vigor to the offspring; and especially so if the pollensizing parent is grown upon a distinct soil, and if possible under similar but somewhat different climatic conditions. And I will add still further, that it should be taken from plants that are not overburdened with bloom, and only from the strongest and most perfect blossoms. The tree also that is to be pollensized should be the most perfect of its kind, and if overfilled with bloom should be so reduced as to leave no doubt that the parent tree could carry its fruit to the greatest perfection of that variety. Only by such care can we hope to reach our highest ideals.

We have been modestly working along the same lines with the pear as with the apple. One tree out of all that were imported by Professor Budd and the Iowa Horticultural Society, and one Chinese sand pear that seems as hardy as an oak, will, we believe, lay the foundation for pear culture in the North, and help to breed away from the blight which is so destructive to this tree.

In closing we will again briefly refer to the plum. The Japan plums and Domesticas, even in the limited sections where the trees endure the winters, rot so persistently upon the trees that little if any interest attaches to them except for the amateur. Possibly from one to five per cent of the specimens that resist the rot may give a variety that will prove of some value. But our reliance is in the improvement of our native plum, which horticulturists know is now well under way. The most serious hindrance to its improvement is its tendency to drop, even before it is fully ripe. But many new and excellent varieties are appearing, some of which are of good size, of excellent quality, hang better to the tree, and show an improved keeping tendency. So the outlook for the rapid improvement of the American plum for the Northwest is very encouraging. Its wide distribution and adaptation to climate, and its extreme earliness of fruitage make it a most attractive fruit for a large number of experimenters.

At the conclusion of his paper Mr. Patten made the following remarks:

I have as yet referred to only two of the apples that I have produced. Here is a plate of apples of thoroughly good quality that are a cross between the Grimes *Golden* and this Patten *Greening*, which seems to be very prepotent in its production of seedlings. I had an apple on the table about the size of these on this plate, of a very dark red color, but it has disappeared. It is known as Gideon's Mary, a hybrid produced by Peter N. Gideon. I crossed the Jonathan upon that very dark red apple, and this is the product, [showing a yellow

apple] a very sweet, good apple. And I will say that out of five seedlings that I now remember to have produced in this way, that three of those seedlings are sweet apples of pretty good quality. This is, as I believe, a pure seedling of the Fameuse; I named it the Iowa Brilliant. It is highly colored when it is fully matured, and so far as my experience goes with the Fameuse seedlings it is the most valuable thing that I have seen. I have the Canada Baldwin, the hardiest of all I have tried on my grounds, now twenty-five years or more of age, and this apple is quite superior to it.

Here are two apples that I brought up from a cross of the Wolf River with the Briar Sweet. Probably a good many of you may not know anything of the Briar Sweet, but I have had specimens of them that are fully as large as this apple, and they are of pretty good quality. They are not sweet, but they have a good, sweetish taste.

Here are two apples that are bred up from Briar Sweet, pollenized by Pound Sweet. They have the distinct marking of the Pound Sweet, and had they not been crowded in the nursery rows, where they are now sixteen years old and standing not more than eighteen inches apart, I think specimens of them would have reached the size of the Pound Sweet. In this class of apples I produced in this way some six or eight varieties that fruited, and they are all sweet apples.

Here is a plate that I wish to call your attention to, and let me say that the trees are as beautiful as the apples. That I call the White Beauty; it is now thirty-one years old, and is perfect in tree on parallel 43, Northern Iowa, as any orange that could be found in California.

This is another seedling of the Fameuse, a tree that we think very highly of as commercial fruit in Illinois. This variety is the Eastman. During the last year we planted ten acres of new orchards, mostly of this variety and this Brilliant.

These are selections of some sixty odd varieties that I have on the tables here, that I have produced in the long years that I have been on the work.

President Goodman: Before I call for questions I want to ask Mr. Patten to look at an apple in the Missouri exhibit called the Lady Sweet. It is the finest sweet apple for Central Missouri or the Central West that I know anything about, the only good sweet apple that we have that is perfectly hardy. The tree seems to resemble somewhat the Northern Spy, and I would like to have you look at that apple and call on Mr. Gano for some of the scions.

Mr. McCue: You spoke of the prepotency of the male parent in form and color of the fruit and also the form of the tree. I would

like to ask you if you have discovered which has the most to do with the season of the fruit, that is, if you wanted an early fruit, would you use the pollen of an early apple, or use the early apple as the female parent?

Mr. Patten: I would use the early apple as the female parent if I wanted an early apple. It is not possible to grow a winter apple in our climate without planting seeds of the long keeping varieties.

Mr. Macoun: We also have noticed that our hardy winter varieties are kinds which reach edible maturity early in the season, that is, in November or December, but will keep all winter. Mr. Patten has varieties which mature comparatively early in the season, probably coming from hardy trees. I would like to know if he has noticed this in one of the Wisconsin apples with which he is familiar, that is, the Milwaukee. Now the Milwaukee is one of the most promising winter apples that we have come across yet, because it will bear as early as the Wealthy, seems to be as hardy as the Wealthy, or hardier, and will keep all winter. We are using that as one of the parents in a series of crosses with the McIntosh. We have other promising varieties as well.

Mr. Patten: The Milwaukee apple in the north of Iowa is a September, or at most October apple, and the tree there is not extremely hardy. It seems almost an anomaly that an early maturing variety should also be a keeping variety, but in happening to put away a basket in the cellar I discovered that they would keep their juice almost perfect; and in fact, I think if it were properly barreled it would keep perfectly. Although a September fruit, I am sure it would be fresh three months later, with scarcely any larger percentage of rot than the Ben Davis.

Mr. Munson: This seems to be a general question, a discussion of a general principle of breeding; and if so, then some experience with grapes might come in here.

President Goodman: We cannot let that come in just now.

Mr. Munson: I will state a certain proposition that I think will bear perfectly on this question as to the effects of the pollenizing parent. I believe that there is no general law with reference to that, from numerous results. I have in mind a certain grape in which the vine is much like the mother, and the fruit unlike the pollen parent. Then I have another grape coming from that, pollenized by a red grape; the fruit in this second hybrid is like the mother, but the vine, leaf, and everything else like the pollen parent. Some of the crossings are like one and some are like the other, they cross over from side to side; and if this takes place in the grape family, I am inclined to think that it applies to the apple and the plum. My experience with apples, plums and peaches has sustained me in that, so that I do not believe that we can

simplification. But the nomenclature of the fig still remains in the judge of the appearance of a plant or its fruit upon the principle that the parent plant always does a certain thing for a tree or vine, and another certain thing for the fruit.

President Goodman: That matter came up for discussion previous to this time, and the opinions expressed by three or four who were studying that, were that generally it runs that way, though not as a law.

Mr. Patten: On that point I corrected myself, so that I think I will not be misunderstood from my remarks yesterday, by saying that it does not always follow; but my observation is that the pollen bearing parent predominates largely. That is my experience.

President Goodman: Tonight we will take up reports of committees and election of officers, which comes on the program for tomorrow morning. We will meet at the Inside Inn at 7:30, and then we will take up the regular papers as far as we can.

WEDNESDAY EVENING, SEPTEMBER 25.

The meeting was called to order in Assembly Hall, Inside Inn, by President Goodman, at 7:30 P. M.

SOME NOTES ON FIGS.

Professor H. N. Starnes, Georgia.

The recent creation of the "Adams Fund" afforded the Georgia Experiment Station the opportunity to conduct certain important investigations with figs in the South Atlantic and Gulf States, which it had long desired to undertake.

The work, as formulated, falls under two heads—Botanical and Entomological—as follows:

NOMENCLATURE OR SYNONYMY.

No fruit, covering but a single species, is so badly mixed in its varietal nomenclature as the fig. The Japanese Plums are sufficiently bewildering; but Bailey, Waugh, Wickson, and others have succeeded partially at least in clarifying their synonymy. Japanese Persimmons are in even a worse tangle than Japanese Plums, but they occupy by no means so important a field, and are, moreover, fairly on the way toward

crudest confusion. Roeding's very valuable work with this fruit has been mainly along commercial lines; Earle has dealt chiefly with cultural methods and with maladies; Price's studies have been strictly local; Howard's publications are of course entomological and confined principally to a consideration of the *Blastophaga* on the Pacific slope; and Eisen, while compiling a veritable cyclopedia of information on the fig—by far the best and completest American work on this subject—has not attempted to "straighten out" its synonymy.

That this is necessary is apparent from the fact that of the thirty-odd so-called "varieties" that have been grown at the South for perhaps the greater portion of a century, and which until quite recently constituted the entire range in this section of varietal experimentation or test, possibly one-third consisted of reduplicated names. "*Dalmatian*," for instance, is known under various local names—*Magnolia*, *Reed*, *Turkey Brozen*, *Brunswick* and even *White "Smyrna"*. Under the latter name it was received by the Georgia Experiment Station from three widely separated points—Florida, Texas and California. Indeed a prominent California nursery shipped the Station a number of *Dalmatian* figs as the true "*Bulletin Smyrna*" or "*Lob Ingir*." The error (?) was not detected until two years afterward when the trees fruited. Similarly "*Brunswick*" is variously known as *California Black*, *Mission*, *Turkey Brozen*, *Barnisotte* and *Madonna*. Several very different figs bear the name "*Du Roi*;" Price even terms it a "black" variety. And so it goes. Examples might be multiplied over and over; yet so well defined are the principal features of most of the figs that there is no reason why there should exist any uncertainty regarding their respective identities, beyond the fact that no one has as yet been in position to conduct their proper study and classification.

Having, as stated, recently undertaken this work, the first step adopted by the Georgia Experiment Station as a basis for the intended differentiation was to obtain from various points in the South and from California specimen trees of every listed fig that could be found. Collections were thus established from many places in Georgia and from Florida, Alabama, Louisiana and Texas, as well as from two of the California Sub-Stations, whose courtesy in the matter is gratefully acknowledged. A small amount of wood was also obtained from the United States Division of Pomology.

The Station next imported directly from southern France (through Nabonnand et Cie., Golfe Juan, Alpes Maritimes) 52 so-called "varieties" under their original Gallic names. At the same time, Mr. John B. Davis of Mobile, who is co-operating in this work with the Station, imported

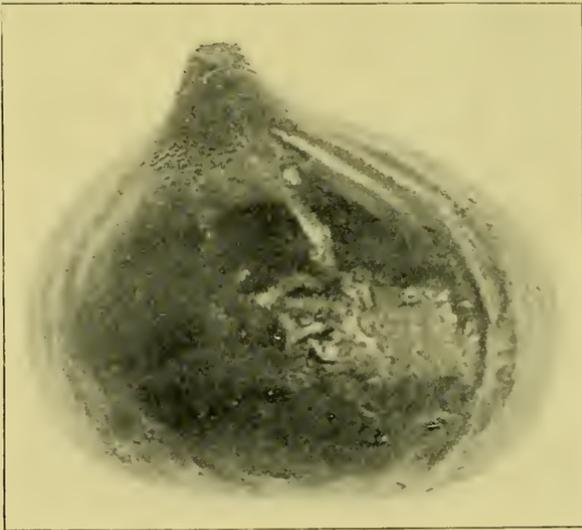
from Piedmont, Lombardy and Naples a number of Italian "varieties," the wood of which he has generously shared with us.

Plats were successfully established from these varied sources in 1904 and 1905, and added to in 1906. They made in all cases a satisfactory and frequently a remarkable growth from the very start. Their foliage was studied during the first year and erected into five groups as the initial step in the process of classification, under the system devised by the writer and explained in Bulletin 61 of the Georgia Station. Every specimen has now fruited—the more precocious varieties in the fall of 1905 and the others in 1906. The different specimens have all been technically described, photographed and recorded, though not with the precision that would have been observed had it been foreseen that the plat would succumb to the cold during the winter just past. This proved unfortunately the case—the warm December of 1906 stimulating abnormal development after a very short fall nap, to such an extent that the subsequent Christmas "blizzard" of that year—by no means of superlative intensity, either, as blizzards go—injured the plat so seriously that the Station was forced to saw off every tree level with the ground—thus losing not only the year or two of time needed to renew the former proportions of the plat, but also having a peremptory halt called on our note-taking, which was of more consequence. Many of the trees so destroyed were 16 feet high, with trunks as large as a man's leg—this, too, after only a couple of years' growth. Fortunately the root system remained intact in almost every instance and therefore our work is not nullified but merely temporarily interrupted. The most provoking feature of the occurrence lay in our inability to furnish last spring to those co-operating with us in different places the complete collections of wood which we had expected to send them. This has been necessarily deferred an entire season.

Notwithstanding this "late unpleasantness" the work undertaken has made fair if not satisfactory progress, and we have incidentally discovered among our importations and other acquisitions several promising additions to the fig list. The most important of these is "PEAU DURE"—a well named variety—for the adjective has evident reference to the resistant character of the skin—its "toughness," not its "thickness"—for though thin, it is leathery, and the fruit should handle well. In quality *Peau Dure* is unique—highly vinous as well as sugary—the only instance, so far as can be discovered, of acidity ever having been recorded as a quality characteristic in a fig. This of course lends the fruit pronounced flavor and character; its quality is excellent—better, indeed, than that of *Ischia White*, at present our standard of excellence. The fruit of *Peau Dure* is also of good size, and, again like *Ischia White* hangs on the tree



BOURGEASSOTTE GRISE FIG.



PEAU DURE (NATURAL SIZE). THE ONLY ACID FIG.
IMPORTED FROM THE MARITIME ALPS BY THE
GEORGIA EXPERIMENT STATION IN 1904.

until it shrivels, seldom turning sour even in damp weather. It may be ranked in color with the type which our French friends indicate by the word "*gris*." Yet its tint is not gray, but a grizzled combination of purple, olive and brown, and this color in any variety of fig is nearly always an indication of good quality.

Another promising variety is "BOURGEOSSOTTE GRISE," also belonging, as its name indicates, to the "gray" type of fruit. It is excessively productive; also bears while quite young.

A third promising candidate comes not from the imported shipment, but is a Georgia production, accidentally discovered in Macon and tentatively termed "WALKER." So far it has eluded identification with any of the standards. It is a large, abruptly conical black or dark-blue fig, of marvellous productiveness and with a wide seasonal range, prolonging its crop through the three months of July, August and September.

The foregoing are but illustrations. There are a number of other varieties of almost equal merit, but this paper is not a catalogue or fruit-list, but merely a statement of the initial operations of the Station in its work with figs. With what has already been accomplished we have every reason to feel encouraged, and had we only at command the requisite means for the present proper conduct and future continuance of investigation along the lines already laid down we would have little doubt as to its final outcome.

SMYRNA FIG CULTURE.

The possibility of economically introducing this industry as a practical addition to the resources of the South Atlantic and Gulf States forms the second division of the Station's work with figs. To test the matter it was of course first necessary to establish plats of both Smyrna and caprifigs before introducing the *Blastophaga* or "pollinating fig wasp."

A number of "true" Smyrna figs, of several varieties, were therefore obtained from California and a supply of Roeding's Caprifigs—Nos. 1, 2 and 3—as well as several others, including some "wild" specimens. The Smyrna Figs were mainly the "*Bulletin Smyrna*" (Lob Ingir) and Roeding's "*Calimyrna*," but included all that could be found at Fresno, Chico and the California Sub-stations. Since the Caprifig must be at least four years of age before it can be expected to bear abundant crops, no attempt has been made to colonize the *Blastophaga*, and the Station has in consequence no results to report on the work undertaken along this line—particularly in view of the destruction of its plats as previously mentioned. The trees have made a good growth the present season, and are now similar in size and appearance to the photographic record of

two years ago. They are actually much further advanced, of course, since their root systems are well developed and they should bear well next season if the winter spares them.

While it is scarcely hoped that at the isotherm of the Georgia Experiment Station either the Smyrna fig or the caprifig will be found sufficiently hardy to permanently withstand our climatic vicissitudes or to consistently and profitably perfect their fruit in seasons as moist as ours, yet it is possible to here maintain plats that will serve for a study of the problem and suffice to both breed the *Blastophaga* and furnish this insect and wood for distribution to those co-operating with us at promising points farther south and west.

At all events the field of work we have undertaken with the fig is intensely interesting, and it is believed that valuable results are not only possible but eventually certain. Nothing but a definitely calculable amount of expense, time and labor now prevents the successful termination of the first division of our undertaking—the disentanglement of the nomenclature and synonymy of the fig; and although the culture of the Smyrna Fig may never become a profitable commercial industry or one in any way comparable as a money-maker throughout our Southland with King Cotton's fair consort—"the Princess Elberta"—it may yet be found possible, here and there, at least, in certain favored sections of the coast region, and may in time serve almost anywhere within South Atlantic and Gulf territory to contribute to the home table, at little cost and less labor, a delicacy well worthy of an Epicurus or a Lucullus.

Mr. Babcock: I would like to ask as to whether attempts have been made or can be made in our moist country to dry figs.

Mr. Starnes: I think not, but some of the gentlemen connected with the Department who are thoroughly familiar with Pacific Coast conditions can inform you better in that respect than I can. On a small scale I have seen dried figs, but they were favored perhaps by the duration of an unusually long, dry period, or else the experiment would not have been successful. I have known of figs being turned out by a regular dryer, but of course this can only be done on a small scale and it will never, I presume, assume the importance of an industry. But figs can be preserved and put up in various forms of preserves on a large scale, and that I understand is done along the Pacific Coast at numerous places; there large canneries put up figs in large quantities and they seem to be very popular.

Mr. Williamson: I would like to ask Professor Starnes if there is any known variety of fig that would live in Kansas without winter protection?

Mr. Starnes: I imagine not.

President Goodman: Or with winter protection?

Mr. Starnes: With winter protection is a different thing. I know in New Jersey plenty of figs that are raised in large tubs that are moved into the cellar in the winter time and remain dormant. The following spring they are put out again, and carried in and out that way from season to season. Other persons plant their figs out of doors at the North and take them up and repot them every fall in large tubs. In that way they manage to secure fruit very successfully.

President Goodman: Is not there a fig in which the root is hardy enough so that it will live out of doors?

Mr. Starnes: The root would, but all above will be killed down in the winter time in Kansas.

President Goodman: But it is a beautiful shrub. In the last few years we have had them in our yard. We cover the roots and it will come up in the spring and we have a beautiful shrub,—one of the most beautiful in the yard.

Mr. Starnes: The fig is never trained in arboreal form, never given a central trunk, but always trimmed to six to ten canes running diagonally up at an angle of forty-five degrees. Each one of those canes at the end of the season will have developed so that they will be full of fruit next winter. Thus if we have ten fruiting canes, we can get a large quantity of fruit, whereas if we had trained that plant to a simple straight trunk, we would have a very much more limited bearing surface. Besides, if such a trunk were affected by some disease, or killed off, the whole plant would be gone, but in the case of many canes, some may be killed and yet there will always be some fruit. Besides, they can be laid down in a severe climate, if the plant is trained in the form of radiating canes, so that it is possible to cover them with rice straw to protect them.

Mr. Hutt: How successful are you with the first crop?

Mr. Starnes: You mean brebas?

Mr. Hutt: Yes.

Mr. Starnes: It depends entirely on the class of figs, you understand. That is, the San Pedro class of figs produce only the brebas; the second crop always has female flowers, and consequently it will shrivel and fall. There is another class the reverse of that, known as the Adriatic figs, which never bear the first crop of figs; they have the female flowers in the breba crop and they will drop those fruits and perfect fruit the second crop. Then there is the Mission type of figs, that has perfect flowers with both crops, and they can perfect both the brebas, or first crop, and the main, or second crop, so it depends on which class your variety is in, what you can do in raising a first crop of figs.

If it happens to be a San Pedro fig, then the breba crop is the only one you can get out of it; if it happens to be an Adriatic fig, you cannot get brebas at all; if it happens to be a Mission type, you can get both if the weather suits them.

Mr. Hutt: What class is the Peau Dure?

Mr. Starnes: That is a Mission type, which has both crops, breba and second crop.

Prof. VanDeman: The culture of figs is something in which I am very deeply interested, and this matter of the selection of varieties, or the knowing what varieties we should plant in different sections of the country, and especially in Louisiana where I am planting, is something that is of intense importance to us. I have planted already about fifty acres as a temporary planting between pecan trees, the pecan trees being fifty feet apart, and I have put three fig trees between each two pecans, in the rows one way; the other not having any planting, but leaving the entire space fifty feet wide in which we cultivate cotton, and perhaps some corn or any other forage crop, but nearly all cotton. My purpose is not to let these fig trees stand longer than they can do so without interfering with the pecan trees, and when they begin to crowd, I shall cut out the fig trees next to the pecan trees, thus leaving one tree for every pecan tree. Now there are three, I hope you understand, three fig trees to every pecan tree. Then we will finally have to remove all the fig trees and then in the course of time,—I shall not be here to see it done,—but in time the pecan trees will have to be thinned one hundred feet apart, leaving only four to the acre; now there are seventeen to the acre, and there are forty-eight fig trees to the acre.

In this way I hope to be able to have a great return from the fig trees, and this is all done with the intention of canning the figs, or preserving them. It is impracticable to dry figs in any region east of the Rocky Mountains. I do not think there is even a place in Texas where they may be grown with success and dried with success. The fig is very peculiar in that it will sour even when dried in the most careful manner. I have never known of any one who has succeeded with more than a very few specimens, so far as my information has been gained from those who have tested it. I have never tried it myself at all.

But the vital question with us is, what varieties can we plant with the greatest profit in the humid regions, and I have ventured to decide for my part in so far that I am now planting one called the New French, introduced by Mr. Normand of Marksville, Louisiana, although it is neither "new" nor "French," but a Spanish fig. But that is the name under which it has been going and I have hoped that we might be able to disentangle the nomenclature sufficiently to find out what it truly is.

I am thinking that it is some well known fig, perhaps in Spain, or perhaps elsewhere in the Mediterranean region, which was brought to this country by a Spaniard and planted in a little locality in the State of Louisiana. Dr. Starnes and I have been corresponding on this subject for some time, and I know he has this fig under culture, but unfortunately this year he has not been able to get any of the fruit, and I suppose he is as much in the dark as he was a year ago. I will say that this variety has proved most eminently successful in the vicinity of Marksville, Louisiana, and it is already bearing on our own place about fifty miles north of there, which is just across the Mississippi river from Natchez, Mississippi. It does exceedingly well, and other varieties grow well and bear well,—nearly all so far as we have tried,—and we are expecting to make considerable out of the fig.

Mr. Starnes [To President Goodman]: I would like to ask you a question in regard to the fig. You made a statement that it lived in Kansas City; what is your lowest temperature in Kansas City?

President Goodman: We have 25 degrees. We cut the tops all off and cover it with leaves and have it in the form of a shrub with about a dozen shoots, and it makes a beautiful growth.

FRUIT GROWING PAST AND PRESENT IN MARYLAND.

J. W. Kerr, Denton, Md.

In presenting a brief history of fruit-growing in Maryland, fundamental facts confine us largely to a consideration of peach growing, as the peach gave rise, development and impetus to all that has subsequently resulted in this wide and pleasing field of industry.

About a century after the settlement of the State, the peach was introduced along the eastern shore of Maryland, where it was destined to reach the zenith of its captivating lusciousness. If earlier writers are to be relied upon, the first "peach stones" that felt the quickening influence of Maryland soil were received from one Peter Collinson of England, and planted at Easton, Talbot County, by George Robbins. For more than a hundred years subsequent to that incident, the peach, apple, pear and grape were grown pretty generally throughout the State, but only in a very limited way for family use.

The incipient and crude stages of commercial fruit-growing in this State are little more than fifty years in the past. During the first half of the eighteenth century, propagation was largely by the planting of seed of good specimens of fruit. Doubtless, hundreds of superior varieties thus grown passed away after a single generation of usefulness.

In the early fifties, however, when the rapidly increasing population of Baltimore City began to call for and consume fruit in greater supply, all the surplus fruit of the farms found its way there, and the profits resulting therefrom served as a strong stimulant to greater and more methodical or business like effort in the growing of fruit as a money proposition. Budded fruit, which previously had been regarded with suspicion, and adjudged inferior to that of the natural by a great majority of Maryland country people, began to disclose its commercial superiority at least, and planting with some regard for the season of ripening began to receive some attention. Thus progressed somewhat tardily the development of peach growing, which was at that period the sum total of fruit growing in Maryland, and this was to a large degree confined to the eastern shore of the State.

The profits resulting from the growing of peaches for market aroused a mild interest in other fruits, and it was but a short period until it was ascertained that the location and superior soils of Kent and Queen Anne Counties were specially adapted to the production of fine pears. A few of the more enterprising and progressive farmers of that locality began the planting of pear orchards, at first of moderate proportions.

Prior to the Civil War there was nothing of a commercial character attempted with any other fruits, of noteworthy import. The close of the War meant the close also of much of the old order of commerce. The leaps and bounds by which many citizens of our country had risen to wealth and fortune undreamed of by the masses previously, sowed with lavish hand the seeds of avarice. This, however, has proven not an unmixed evil; for while it implanted in the breast of nearly everybody the relentless desire to acquire wealth by short-hand, it brought to the surface and vitalized an incalculable volume of energy and ingenuity that doubtless would never, otherwise, have left its impress upon the world's progress. This condition, perhaps, was less acute in the sturdy farmer, probably being ameliorated by his environment, but in degree its intensity was as unmistakable in him, as in the manufacturer or the stock-broker.

Fruit-growing in Maryland began to pulsate with this throbbing energy, forced into life and action by the bacteria of avarice. In addition to an increased acreage of peach and pear planting, the apple, cherry, grape and strawberry received consideration as aids not only in liberally providing for the wants of the family, but to insure against the "rainy day" as well.

The evolution in packages or receptacles in which fruit was conveyed to market had now progressed as far as the slatted crate, of

various sizes, ranging from a capacity of three-fourths of a bushel to one and one-fourth bushels, for peaches, pears and apples.

As time passed, and efforts in fruit-growing were still attended with success, which in some instances was quite marked, the business became more widespread and general. In the 70's, peach planting reached its greatest acreage. Though a number of nurseries had been established in the State to meet the rapidly growing demand for trees, tens of thousands were bought and brought in from other states. "If one thousand trees pay a handsome profit, why not plant five, ten, or even more thousands, and become independent." Such was the reasoning of fifty per cent of the planters, whose capacity was taxed to the full limit, in caring fairly well for one thousand trees and their product. The lesson that "Art is not the result of instinct" was in numerous instances very costly. The ravages of the yellows prompted the inquiry, "After the peach—what?" even among the most successful and intelligent growers, and directed attention more to other fruits than had previously been the case. In localities where the pear had been tried successfully, plantings were greatly increased.

The apple in the larger part of the State had not won the confidence of the rank and file of our fruit growers, as a safe or even promising commercial venture, but the incurable and rapidly spreading disease of the peach, served to secure for this King of Fruits a more critical study; its inherent adaptiveness began in a somewhat coquettish way to reveal itself, resulting in more extended and more methodical planting, on good business principles. The plum, too, in a rather experimental way, was planted contributory to a solution of the absorbing problem as to what would follow the peach. Small fruits in several parts of the State were slowly but surely gaining in favor as crops for profit. Strawberries, raspberries, blackberries and gooseberries were proving satisfactory, and steadily promoting interest in their culture. The five-eighth basket rapidly superseded the crates in earlier use for tree fruits.

Occasionally ineffectual attempts were made at organization of growers, for the better protection of their interests in the transportation and sale of the products of their orchards. The mountainous sections of a portion of the western part of the state, threatened to outclass the eastern and western shores in the production of handsome peaches, at least so far as volume or quantity figured. The geographical situation of the state, giving easy accessibility to the great markets of the East, its genial climate and soils adapted to so large a variety of Pomona's health promoting progeny, began to assert themselves with redoubled force upon the minds of the rural population, as significant gifts of nature. That the successful culture of fruits, and a business-like dispo-

sition of them involved more than a happy-go-lucky procedure upon the part of the growers, was annually becoming aggressively evident. As the years passed new ideas asserted themselves and were slowly incorporated into practice; growers became more and more restive under the vicious and flagrantly unsatisfactory plan of disposing of their fruits by consignment. The supply and variety of fruits to be disposed of was increasing in volume at a rapid pace. At the close of the eighth, and earlier years of the ninth decade, railroads running through the heavier fruit belts, no longer estimated berries by the number of crates to be transported from the more important stations, but "How many carloads must we provide for?" was the inquiry. About this time an epoch in pear growing asserted itself. Pears were not generally grown throughout the state, until the advent of the Keiffer. This made it easily practicable for nearly every owner of land to become a pear grower. The introduction of the Japanese plums greatly stimulated interest in the culture of plums in a commercial way.

About 1895 the consignment plan began to yield to the more businesslike plan of selling direct to buyers at the stations and steamer wharves. This plan at once puts a premium upon careful grading and systematic packing, and imparts helpful instruction to the growers in both art and honesty. It is impressively accepted because it promotes their personal and pecuniary interests. With competent buyers looking after a supply, the risk involved by the city fruit dealer is nominal, as the telegraph is always available to apprise them of any unexpected or sudden changes in the market. So that both ends of the line are pleased with the reformation. One disturbing feature, however, is not controlled satisfactorily by this or any other human agency, and that is transportation. There seems to be no definitely equitable principles that govern or regulate the indispensable evils in the arrangement of tariff tables.

At the close of the nineteenth century, notwithstanding the marked decrease in the acreage of peach orchards, fruit growing in the state had grown to much larger proportions than ever in its previous history. The seriousness of the great menace to the industry, as presented by the San Jose scale, was not fully grasped at this period by much the larger number of growers, but the hasty spread of its destructive work could not long fail in bringing the owners of fruit plantations to a full realization of the grave importance of practical steps in the protection of their interests. To some, the increased burden and tax imposed for the preservation of their orchards was sufficiently discouraging to drive them out of the business; but to take the place of such there were others less timid, or more enterprising.

The situation as at present existing finds a class of younger men forging to the front, as the successful fruit growers of the state,—men with broader views, and with a training which better fits them to cope with changed and more complicated conditions. Of course, there are still some of the old veterans to be found holding vidette posts in all that pertains to progress and advancement in modern fruit growing. The six-basket carriers are accepted as much more desirable packages for all good grades of peaches and plums, and the finer pears. The more important shipping points are visited during the busy season by buyers from different cities, and this method eliminates almost entirely stations from which consignments were made of smaller quantities. Growers prefer to haul their fruit from five to ten miles in order to sell it themselves, or as is the case in a few instances, see it auctioned off on its merits to the highest bidder.

Many carloads of small fruits as well as the tree products are disposed of daily at prominent shipping centers. The greatly increased plantings of apples in recent years, as also the planting of new peach orchards, is confined almost exclusively to the thrifty type of young men. The principle of the old saw—"You can't teach an old dog new tricks"—applies with conspicuous force to men in their relations to the changed conditions of commercial fruit growing. Individualism, however electrified by enterprise, ere long realizes the wearying disadvantages that burden it, in comparison with a division of the cares, difficulties and risks as in the modified and conservative forms of co-operation, whereby the often vexatious problems of transportation, the disappointing and disagreeable instability so widespread in labor, the multiplied difficulties of insect, soil and culture management, collectively form a burden, that tests to the limit, and sometimes beyond, individual nerve and endurance.

Even under realities such as these, Maryland fruit-growing is progressing and prospering; the men behind it are much alive to the absolute and inexorable requisites to preserve and perpetuate its thrift and its profit.

President Goodman: There will be no discussion at this time. We will vary our program a little and call for reports of committees that are ready. The committee on credentials and on Wilder medals are not yet ready to report. There is a special committee appointed by the President during the summer on the National Council of Horticulture, consisting of Professor Lazenby, Mr. Green and Mr. Taylor. I will call upon Mr. Taylor, if he is ready to give that report.

REPORT OF COMMITTEE ON PROPOSAL TO JOIN THE
NATIONAL COUNCIL OF HORTICULTURE.

Having considered the outline of plan and scope of the Council of Horticulture as presented by Secretary H. C. Irish at the Kansas City meeting (Proceedings for 1905, pages 101-103), and as further ascertained through correspondence and personal conference with Secretary Irish and others interested in the formation of the Council, your committee would report as follows:

The purpose of the Council, as understood, is to provide a more or less permanent advisory body made up of representatives from the various national horticultural organizations now existing. It is expected that such a body will exert a wholesome and unifying influence in horticultural matters that are of general interest, which will prove beneficial to horticulturists in general and to the several organizations that are covering and developing special phases of work, such as the American Pomological Society, The Apple Growers' Congress, The National Nut Growers' Association, and the various horticultural trade organizations.

It is believed that a representative body of this character will be useful in connection with such legislative or similar exigencies as sometimes arise during the period between the annual or biennial meetings of the existing organizations, as it will be able to act more promptly and effectively than it is possible for existing organizations to do when joint action is necessary.

It is not the understanding of your committee that the Council proposes to take the place of all or any of the existing organizations, nor that it contemplates annual or other regular sessions with set programs, but rather that it is the intention to provide for holding at such times and places as may from time to time be agreed upon, occasional conferences upon topics of general interest in addition to the meetings of the Council itself, which will doubtless for some time, at least, necessarily be held at such times and places as will suit the convenience of the delegates composing it.

The effort which the Council has made to stimulate popular interest in horticultural matters through the dissemination of interesting and accurate data regarding the cultivation and use of flowers, ornamental plants, fruits, etc., through the columns of the daily and weekly papers, is strongly approved by your committee and is considered worthy of further development. Systematic work along this line could hardly fail to result in a tangible and considerable increase in popular interest in horticultural work, and a corresponding tendency toward the elevation of both sentimental and commercial standards in this line.

So far as the question of expense of maintenance of the work of the Council is concerned, it is not understood that any very definite plan has yet been evolved by its founders. Little expense has been incurred thus far except for the preparation of matter for publication, and the cost of this has been defrayed by contributions from seedsmen, florists, nurserymen, etc., in the lines most likely to reap pecuniary benefit therefrom.

It is understood that the organizations thus far affiliated with the Council have made definite grants of from \$100 to \$300 per annum for the support of the Council. The extent to which this Society should contribute has not been definitely considered by your committee.

In view of the above we approve the principles upon which the Council is founded, and respectfully recommend that this Society align itself with the Council by providing two official delegates to it, without definite recommendation as to financial support at this time, or until more definite plans for the maintenance of the Council have been formulated.

Very respectfully,

WM. A. TAYLOR,

Chairman of Committee.

It was moved by Professor McIntosh, and seconded, that the report be adopted.

Secretary Craig: There is one thing that I am not clear upon in regard to the scope of the work of this National Council, and that is the work which it proposes to do, which, so far as I can see, invades the province of the American Pomological Society. I did not have the privilege of attending the meeting which was held here on Monday under the auspices of the National Council of Horticulture, but from what I can learn of the program and the reports of the meeting, I cannot see that it differs in any material degree from the kind of matter which this Society under its scope would ordinarily discuss. I agree with the report of the committee so far as it speaks of the work of such a council being of an advisory character, and dealing with such questions as may be beyond the scope of any one society, but I have placed myself on record in correspondence with members of this Council as being opposed to the support or recognition of any self-constituted or otherwise organized council which expects to take the place in any degree of this national Society, with its over half a century of good work behind it and the future broadening as we look into it. Now, I should want that report very clearly to outline our attitude in that respect, in regard to the scope of the Council, the purpose of it, whether it is going to take up

subjects such as it has taken up in the last day or two, whether it is likely to duplicate work and whether we should support an organization which duplicates the work which we are expected to do or not. It is a question that is worth considering. From the merely advisory standpoint, there is work of that kind possibly to do, but aside from that I cannot see what there is at all. If a matter of general interest should arise, there is no reason why the societies representing various types of trade and pomological work should not appoint delegates and work co-operatively and harmoniously through those delegates, and it will be more likely to be effective than if done by delegates appointed generally and not with a specific purpose. I merely express my individual views, and with the idea of bringing before you the fact that there is an indefiniteness about the work of this Council which it seems to me ought to be cleared up. The Nurserymen's Association and Florists' Association have supported it, for the reason that it has been a publicity bureau for them. The work it has done has been to aim to stimulate the planting of flowers, of trees and that kind of work. We are in that same line ourselves, for the purpose of stimulating horticultural and pomological progress. It seems to me it must be clear what we are doing before we take any definite steps.

Colonel Watrous: I confess to a feeling somewhat like that expressed by Secretary Craig. This is an old and honored Society; the world knows its work, knows what it has done, what it stands for; and I feel a little jealous of sending an ambassador to some other authority that shall sort out what we do and publish from our proceedings such extracts as may please them. I know that the Nurserymen's Association gave some money to this organization. It was done without any discussion; some one made a speech and said that it was something to advertise the nursery business and increase the sales of the nurserymen, and they gave some money; but there was no fair consideration of it,—in fact, no discussion at all. I think it ought to have been discussed even there, and here I think it should all the more be discussed, and we ought to know. Here is another organization taking up, as Professor Craig has said, many things that we may well consider, that we ought to consider, and which we do consider every time we get together. I feel a tenderness for the reputation and honor and prestige of this Society such that I dislike to see it subordinated to any other society on earth; and when we send ambassadors or delegates, that is in a sort of way admitting that there is some other authority beyond the American Pomological Society in America. I have believed, and I believe it today as much as ever before, that there is no other society or authority under the sun that stands so high, that is so capable of being its own

supreme court of authority in its chosen field, as the American Pomological Society. Its decisions have never been questioned. It has been the Supreme Court of Pomology since its origin, the very highest court; why should we now insist on creating a higher one, or why should we do anything that will countenance the thought that we believe that there can be a higher one? I do not believe that there exists in America a body of men capable of revising or passing upon the judgments of the American Pomological Society; and it has been and is fit to continue to be the Supreme Court, without attempting to dictate or in any wise interfere with the work of the florists, the nurserymen and other societies. I do not see why we should send delegates or should in fact do anything, only to do or continue to do the great work, the responsible work, that this Society has done, for which it was created. It is just as capable of carrying on that work as it ever has been, I believe. I heard in a meeting the other day the remark, that "If the American Pomological Society continue"—it might do so-and-so. I do not think we ought for a moment to let anyone believe, or at least let any one of ourselves believe, that there is any "if" about it. It is true that the old men are going off the stage, but the young ones are not dead, and they are just as capable as the older ones were and they have the benefit of the mistakes that the old ones have made, and any good that they may have done. Our reports are open, and any one can publish from those reports anything that seems worthy of publication, and thus they are themselves the mouthpiece of this, the Supreme Court of Pomology upon this continent. I really at this time am not prepared to vote to adopt this set of resolutions, which no doubt have been carefully considered. I think we ought to consider this further, and I do not believe we are dead yet.

Mr. Dutcher: Owing to the lateness of the hour and the vast amount of work we have before us, I would like to move an amendment to be inserted in the motion already before the house, and that is, that we receive this report without adoption. Let it come up at some future time.

Motion was seconded by Colonel Watrous.

Mr. Taylor: As chairman of the committee appointed in accordance with the action at Kansas City, which I was not privileged to hear, not having been at the Kansas City meeting, I would say that the committee feel that in no case does the proposal of the Council as understood by them, and as outlined, encroach upon the field of the American Pomological Society. Had there been any intimation that the organization of the Council necessarily involved conflict with the work of this Society, I am very sure that the committee would have disapproved the proposition entirely. I wish to say that the understanding of the

committee of the purpose of the Council is that it is primarily intended to unify to a greater extent than has previously been possible, the horticultural activities of the country. I do not say this as an advocate, for I am not advocating especially the immediate passage of this resolution. It needs discussion, it should be most thoroughly discussed, and should be thoroughly understood before a vote is taken upon the report as presented; but it was the feeling of the committee that there have been times in the past frequently when an organization of friends of horticulture in this country would be greatly to the advantage of horticulture. Exigencies arise sometimes in connection with expositions, sometimes they relate to legislation, sometimes they relate to the formation and advancement of policies that cannot be handled through our divers organizations as they exist, and it is this feature of the Council plan that appealed especially to our committee. The understanding is that the Council does not propose to organize an organization that will in any respect conflict with the American Pomological Society, or the Nut Growers, or the various trade or other organizations that exist, but that it will endeavor to organize from them what you might call joint meetings or general sessions that would be to the interest of all who are concerned. I think this should be most thoroughly discussed and understood.

Mr. Dutcher: The motion was made simply to get the thing in such shape that we could discuss it when we had more time than it is possible for us to have at this meeting.

President Goodman: The motion is virtually tabling the resolution; it may be taken from the table at any time.

Secretary Craig: Is it possible for this Society to appoint a committee which shall be greater than itself? Every member of the committee of the National Council is a member of this Society. When we appoint two delegates, we are adding two more to it.

Mr. Irish: Mr. Taylor called attention to the fact that at Kansas City this committee was appointed. They have carefully considered it and made this report. It seems to me unfair not to take action on the report. That is one thing.

Now, another is, that the Council is not considered in any sense a body superior to the American Pomological Society—it is not over it in any sense of the word. Mr. Taylor has expressed very clearly, I think, the situation. One other point, if I may very briefly call attention to it: the meeting that was held Monday under the auspices of the Council was held at the request of the Exposition authorities, and embraces a view not embraced, as I understand it, by the American Pomological Society. There is a difference between American pomology

and American horticulture. In the first session we had on our program some problems like soils and insect diseases. They are of interest to the pomologist, that is true, and we had to make a program which was rounded out and covered all branches of horticulture. We have vegetables, which the American Pomological Society does not pretend to have anything to do with, we have florists' flowers, we have landscape gardening, commercial growing of vegetables, forest trees, and then we have the horticulture in various parts of the country; and in that sense these papers were not considered from the fruit culture or from the pomological standpoint, but from a floricultural standpoint as well as from a pomological standpoint, from the vegetable gardening standpoint as well as from the pomological standpoint; and so the field that the Council embraces is simply broader. We want nothing higher in pomology than the American Pomological Society, any more than we want anything higher than the Society of American Florists in floriculture. It is not a body that is superior, that is above, it is simply a committee; it is not a new organization, it is simply a committee of the different organizations, with some general delegates who are not interested in commercial work.

Mr. Munson: This matter presents itself to my mind in this way, that if there should some interest come before this Society that we feel that we could handle much better and more efficiently by co-operating with the other special societies, then we could bring that organization into existence in this way; that is, this Society could appoint a committee or a delegation to visit and lay before it the proposition on which we desire co-operation; and that there not be another organization, another horticultural society, but a co-operative movement instituted among the societies. That might come about by any one of those several societies seeking the co-operation of the other societies, each one sending delegates. Let them stand on the same footing, and maintain their own positions. But if we delegate a power to act with a new society, a new organization, that takes the position of agent of certain horticultural work, that is special in its nature and yet also trying to do a general work belonging to all societies, it seems to me a mixing of ideas in organization. So while the presentation by the committee of its report meets in a large degree with my views, yet to go ahead and build the organization that has been initiated would, it seems to me, be opening the way for dissension, jealousy, etc., that would not only probably break down that new society in a short time, but might do the other damage also, and consequently I am not in favor of supporting the motion.

Mr. Williamson: I think there is room enough in this great country

of ours for not only the three or four organizations of national importance that we now have, but for a dozen or two, and I believe the American Pomological Society should go right along. I would like to see her continue right along. All these scientific gentlemen who are authority in this country and for all North America, are perfectly willing at any and all times to furnish us a paper upon those scientific subjects, upon everything that they have learned, as we have found out by the reading of the various papers which have been before us at this meeting. I am in favor of keeping up all kinds of these horticultural societies; spread them, let them do all they possibly can on this great question.

Mr. Kirkpatrick: It occurs to me that this great American Pomological Society, including the United States and all the other governments of the North American continent, has a specific purpose to deal with questions of pomology; but we are interested in things that are not pomological, we are interested in things that are agricultural, we are interested in things that are legislative, we are interested in things that pertain to transportation; and if we had a Council whose duty it was to go into these several fields and specialize in those respective fields, it would not be any infringement of our natural rights. This is such a wide domain, such a great country, and there is so much brain and experience, that we need not fear any of these Councils that may be organized, and I believe that we can safely organize any of them that will pertain to our best interests.

President Goodman: Not any number of societies could accomplish any more for pomology than this Society by itself. It is the parent of American pomology, and if I want to ship apples, I can go with the Society behind me and get any rate that four hundred different societies can get; we just present the matter in a business way, so that point to my mind has no weight whatever.

The question is virtually tabling this resolution, that is, receiving it and not adopting it.

The motion was then put and carried, and the report declared laid on the table for further consideration.

REPORT OF THE COMMITTEE ON INSPECTING AND GRADING FRUIT.

Wm. A. Taylor, U. S. Department of Agriculture, Washington, D. C.

Circumstances beyond the control of your Committee having prevented the members from conferring on the subject assigned to them, the following tentative report is submitted as a basis for future discussion:

In the first place it is the conviction of your committee that agreement upon and adoption of fairly uniform and practicable grade standards is of greater importance at the present juncture than any inspection system other than such as can be provided by any co-operative association of growers or almost any large handler of fruits. The above statement is considered especially true with the apple as now grown in several important districts of the country, and it is the fruit that your committee has chiefly had in mind in its consideration of the subject.

The first difficulty encountered by those who have endeavored to formulate definitions of apple grades that could be followed in the commercial handling of this fruit was evidently the necessity of agreeing upon some distinguishing grade characteristic that could be exactly described and determined.

Where barrel packing is practiced, as is almost everywhere the case in the apple districts east of the Rocky Mountains, it is not surprising that size of fruit as expressed in diameter in inches has become the most conspicuous and, in actual practice, almost the only characteristic considered in the grading of our apples. Thus the formulated grades of the International Apple Shippers' Association and the Apple Growers' Congress, which are the generally accepted standards in the United States, are as follows:

INTERNATIONAL APPLE SHIPPERS' ASSOCIATION.

"Requirements for No. 1 Apples.

"RESOLVED, That the standard size for Number One Apples shall not be less than two and one-half inches in diameter, and shall include such varieties as the Ben Davis, Willow Twig, Baldwin, Greening and other varieties kindred in size. That the standard for such varieties as Romanite, Russet, Winesap, Jonathan, Missouri Pippin and other varieties kindred in size shall not be less than two and one-quarter inches. And further that No. 1 Apples shall be at the time of packing practically free from the action of worms, defacement of surface or breaking of skin; shall be hand-picked from the tree, of bright and normal color, and shapely form.

"No. 2 apples shall be hand-picked from the tree, shall not be smaller than two and a quarter inches in diameter, and of fair color for the variety. The skin must not be broken nor the apple bruised, and must be practically free from scab and other defects. This grade must be faced and packed with as much care as No. 1 fruit."—*Year Book of International Apple Shippers' Association, 1906, page 10.*

AMERICAN APPLE GROWERS' CONGRESS.

Apple Grades.

"RESOLVED. That a No. 1 apple shall be not less than two and one-half inches in diameter and shall include such varieties as Ben Davis, Willow Twig, Baldwin, Greening and other varieties kindred in size; and varieties such as Romanite, Russet, Winesap, Jonathan, Missouri Pippin and other varieties kindred in size, shall not be less than two and one-quarter inches in diameter; and further a No. 1 apple shall be practically free from the action of worms or not over ten per cent of the apple affected by scab or other defacement of surface, shall be hand-picked from the trees and not bruised or skin broken, shall be of a bright and normal color and shapely formed.

"No. 2 apples may be one-quarter inch less in diameter than No. 1 apples and not over twenty per cent of the apples affected by defacement of surface, by scab, dry rot, worms or other defects, shall be hand-picked from the trees and not bruised or skin broken, shall be of a bright and normal color and shapely formed."—*Transactions of the American Apple Growers' Congress, 1903, pages 90 and 91.*

These grades, while recognizing normal color, symmetrical form and freedom from bruises or other injuries as important, place principal stress upon a minimum size of both grades of the two indefinite groups of varieties into which apples are supposed to be commercially divided. These groups also are based entirely on size without reference to other qualities. These first steps towards establishing a standard have undoubtedly resulted in a partial clarification of the chaotic condition that previously existed, but in the judgment of your committee, they can only be considered as tentative and temporary.

In a continent like North America, with its wide range of climatic and soil conditions, and producing large numbers of choice varieties on a commercial scale, no arbitrary schedule of dimensions or other characteristics can be set up that will apply to all varieties and be fair to both producer and consumer. The product of each important region must eventually be crated and packed with reference to the behavior of varieties in that region, rather than to any arbitrary continental or universal standard.

A barrel of well-grown, well-colored, unblemished and carefully handled Esopus or Yellow Newtown from the orchards of New York is as rightfully and properly designated "fancy" or "No. 1" as a box of the same variety grown in Oregon or California, even though the fruit in the latter may be of more brilliant color and larger size.

The underlying purpose of all grading as understood by your Com-

mittee is to insure to the purchaser uniformity of contents of the package and to indicate to him as nearly as may be by ocular inspection, the degree of perfection of texture, flavor and other desirable characteristics possessed by the fruit. Large size is but one of several important factors and should not be over emphasized in formulating a grade definition.

It is recognized as possible that certain minimum and maximum sizes may be desirable, but these should be worked out for the different regions separately and with special reference to particular varieties, or at least to groups of varieties that are found to run practically identical in size. Your committee is strongly impressed with the fact that other characteristics should in the future receive more attention, and the size less than, has heretofore been the case. Take for example color; few apple lovers would select for their own eating an apple abnormally pale or lacking in that waxy finish which suggests and usually accompanies the fully developed, normal and characteristic flavor of the variety. Then why subordinate normality of color to an arbitrary size specification (within reasonable limits) in defining the grade? "Sizing" and "grading" are in fact two different propositions that have been considerably confused in most discussion of this subject. They should be separately considered wherever possible with a view to more accurate definition of grade standards. Is not the general practice of orange packers, as quoted below, where grades are based entirely upon color, texture, soundness and freedom from injury, entirely independent of size, wiser than the present eastern practice with apples?

CALIFORNIA ORANGE GRADES.

"Fancy" Oranges—Color shall be deep reddish yellow, varying according to location; sound, fine texture, shapely, reasonably thin skin, free from scars, cuts, bruises or discolorations, heavy and juicy, stems close clipped, and shall show no frost damage.

"Choice" Oranges—Those not good enough for "Fancy;" shall show fairly bright color, varying according to location; may not be as fine texture, or as smooth as "Fancy;" skin may be somewhat thicker, may show slight discolorations, and perhaps a few scars; must be free from frost damage, cuts and bruises and must be reasonably heavy and juicy.

"Standard" Oranges—Those not good enough for "Choice." May be stained, discolored, rough skinned, and irregular in shape. Must be merchantable shipping stock, free from bruises.

"Culls"—Shall be oranges not good enough for "Standards." These

grades shall apply to "Navels," "Seedlings," "Valencias," "Mediterranean Sweets," or "St. Michaels."

The variety and name of locality from which the fruit is to be shipped shall always be given with the grade, and the general difference in quality between shipping regions shall be considered. For instance, "Fancy Redlands Navels" would be better quality than "Fancy Orange County Navels," etc. (Buyers should learn the general quality and characteristics of the different producing regions.)

The following Pacific Coast Apple Grades apparently trend in the right direction.

PACIFIC COAST APPLE GRADES.

"Fancy" apples shall be of good natural, matured color, except for cold storage purposes (when they shall be a little green); shall be hard, smooth and free from discolorations, free of worms, scale, or sun damage, true to variety named, and have stem intact.

"Choice" apples shall be fair color, somewhat less smooth and firm than fancy and reasonably free from scars and discolorations. Shall be free of sun or worm damage.

A reasonable allowance for variation in size of apples shall be made for hand sorting, and all apples shall be sorted not longer than ten days before packing.

The above applies to Bellflowers, Winter Pearmain, Missouri or Newtown Pippins and Astrachans, or any other variety of apple grown in California, Washington or Oregon. (Above from Credit Book—Produce Reporter Company's, Chicago. Page 14.)

It is of course recognized that orange packers and most packers of apples in boxes, size the fruit in any case, as efficient box packing necessitates this.

Your committee is not prepared at this time to advise against a continuance of the practice generally followed in the East with a large proportion of the crop, of packing substantially all sound and merchantable fruit together without sizing. One unfortunate result of the fixed minimum sizes for apples has apparently been to encourage the branding of all such fruit as "No. 1" grade. As a consequence, this designation, which originally stood for "first quality" has come to be understood as signifying in practice the inclusion of all fruit above the minimum size regardless of other characteristics.

The grade definitions in the last revision of the Canadian Fruit Marks Act, which follow, impress your committee as freer from objectionable features and more practicable to put into operation than those previously cited.

GRADE DEFINITIONS.

(Canadian Fruit Marks Act, 1901, as amended 1902 and 1906.)

"6. No person shall sell, or offer, expose or have in his possession for sale, any fruit packed in a closed package upon which is marked any designation which represents such fruits as of,—

"(a) 'Fancy' quality, unless such fruit consist of well grown specimens of one variety, sound, of uniform and of at least normal size, of good colour for the variety, or normal shape, free from worm holes, bruises, scab and other defects, and properly packed;

"(b) 'No. 1' quality, unless such fruit consists of well grown specimens of one variety, sound, of not less than medium size and of good colour for the variety, of normal shape and not less than ninety per cent free from scab, worm holes, bruises and other defects and properly packed;

"(c) 'No. 2' quality, unless such fruit consist of specimens of not less than nearly medium size for the variety, and not less than eighty per cent free from worm holes and such other defects as cause material waste, and properly packed."—*Bulletin No. 11, Dept. of Agriculture, Ottawa, Canada. Pages 3 and 4.*

It will be observed that in the above definitions, size is left to be determined according to the variety and the region in which it is grown, providing that the "Fancy" quality shall be of at least normal size, the "No. 1" quality "not less than medium size" and the "No. 2" quality "not less than nearly medium size" for the variety.

The principal objection to the grade definitions which place "No. 1" below "Fancy" is a contradiction of terms evidently growing out of the confusion between "sizing" and "grading" that has prevailed throughout the continent. These grades also lack provision for an "orchard run" pack which is in effect; and which most barrel packers are branding as "No. 1."

To cure these defects and supply the omission, the following tentative grade definitions are suggested by your committee:

SUGGESTED APPLE GRADES.

"Fancy" or "Extra" grade shall consist of well grown specimens of one variety, of uniform and at least normal size, of high color for the variety, of normal shape, free from insect and fungus injuries, bruises or other defects, and properly packed.

"Choice" grade shall consist of well grown specimens of one variety, of not less than medium size, of good color for the variety, normal shape,

and not less than ninety per cent free from insect and fungous injuries, bruises or other defects, and properly packed.

"Standard" grade shall consist of specimens of one variety and not less than eighty per cent free from insect, fungous or other injuries impairing the soundness of the fruit, and properly packed.

"Orchard Run" grade shall consist of sound and normal specimens of one variety, of not less than medium size and color, and not less than ninety per cent free from insect, fungous or other injuries impairing the soundness of the fruit, and properly packed.

Size in all grades where practicable shall be indicated by diameter in inches or by approximate number of fruits per unit, such as per package, pound, quart, peck, or bushel.

Respectfully submitted,

WM. A. TAYLOR,

C. L. WATROUS,

Committee.

On motion, the report of the committee was accepted.

President Goodman: The next thing to be called for is the report of the Committee on Vice-Presidents. Is Mr. Woods, here, the chairman?

Mr. Dutcher: I was asked to read that report. I do not see Mr. Woods here.

REPORT OF COMMITTEE ON NOMINATIONS.

S. B. Woods, chairman, called meeting to order. On motion C. H. Dutcher was elected secretary.

On motion and unanimous vote, the following ticket was recommended for election by this body for the ensuing period of two years: President, L. A. Goodman of Missouri; vice-president, T. V. Munson of Texas; secretary, John Craig of New York; treasurer, L. R. Taft of Michigan. L. B. Judson of Ithaca, N. Y., is unanimously recommended for assistant secretary.

We recommend the continuation of the present Executive Committee.

We recommend that all the states represented at this meeting by delegates from their state horticultural organizations be requested to name a vice-president where a known necessity for a change exists; and that where no change is thus presented to Secretary Craig, the present vice-president be continued.

We recommend that Cuba be added to our list, and that Professor C. F. Austin be vice-president.

(Signed)

S. B. WOODS, President.

C. H. DUTCHER, Secretary.

It was moved by Professor Mackintosh that Colonel Brackett cast the vote of this Society for the officers nominated, which motion was carried unanimously, and the ballot cast by Colonel Brackett accordingly.

OPERATION OF THE CANADIAN FRUIT MARKS ACT.

A. N. McNeill, Department of Agriculture, Ottawa, Canada.

I take it that a paper of this kind shows that the scope of the Society's work is fairly broad. Of course in the operation of the Canadian Fruit Marks Act there is no thought whatever of any horticultural problems or any scientific problems, but simply a commercial question of how best to stamp the fruit that it is presumed that this Society is teaching the fruit growers of this country to grow.

I propose tonight, just as briefly as I possibly can, to tell you what has been the result of the six years of operation of the Fruit Marks Act, sticking as closely as I possibly can to facts. I have brought with me a package of copies of the Fruit Marks Act, and it is so simple and short that you can perhaps look over a few sections. You will find the important parts in sections 4, 6 and 7.

[Reads.]

4. Every person who, by himself or through the agency of another person, packs fruit in a closed package, intended for sale, shall cause the package to be marked in a plain and indelible manner, in letters not less than half an inch in length, before it is taken from the premises where it is packed,—

(a) With the initials of his Christian names, his full surname, and his address, or, in the case of a firm or corporation, with the firm or corporate name and address;

(b) With the name of the variety or varieties; and

(c) With a designation of the grade of fruit, which shall include one of the following four marks, viz.: "Fancy," "No. 1," "No. 2," "No. 3," for such mark may be accompanied by any other designation of grade or brand, provided that such designation of grade or brand is not inconsistent with, or marked more conspicuously than, the one, of the said four marks, which is used on the said package.

5. No person shall sell, or offer, expose or have in his possession for sale, any fruit packed in a closed package and intended for sale, unless such package is marked as required by the next preceding section.

6. No person shall sell, or offer, expose or have in his possession

for sale, any fruit packed in a closed package upon which is marked any designation which represents such fruit as of,—

(a) "Fancy" quality, unless such fruit consist of well grown specimens of one variety, sound, of uniform and of at least normal size and of good colour for the variety, of normal shape, free from worm holes, bruises, scab and other defects, and properly packed;

(b) "No. 1" quality, unless such fruit consist of well grown specimens of one variety, sound, of not less than medium size and of good colour for the variety, of normal shape and not less than ninety per cent free from scab, worm holes, bruises and other defects, and properly packed:

(c) "No. 2" quality, unless such fruit consist of specimens of not less than nearly medium size for the variety, and not less than eighty per cent free from worm holes and such other defects as cause material waste, and properly packed.

7. No person shall sell, or offer, expose or have in his possession for sale, any fruit packed in any package in which the faced or shown surface gives a false representation of the contents of such package; and it shall be considered a false representation when more than fifteen per cent of such fruit is substantially smaller in size than, or inferior in grade to, or different in variety from, the faced or shown surface of such package.

Now I might explain a point here about the fancy grades. It really was not the wish of the great body of fruit growers that there should be four grades; I think the better judgment of the fruit growers inclined toward making No. 1 the best fruit, No. 2 the second best and No. 3 the third grade, dividing roughly all marketable apples into those three grades, a fancy grade being practically perfect apples, and all the apples in the package being alike. The second grade, that is No. 1 apples, are practically perfect apples, with the exception of ten per cent, that is ten per cent will cover all defects, bruises, scabs and so on, so that it is not at all likely there will be ten per cent of any one particular defect, not ten per cent of wormy apples, nor ten per cent of bruised apples, but all defects together will constitute that ten per cent. That constitutes a very high grade of apples, higher than it is commonly supposed. The No. 2 grade was intended for the great commercial grade, and that is eighty per cent free from worm holes, bruises or scab or any other defect that would cause material waste. Twenty per cent allowance is placed there, but you will notice there the apples of the No. 2 grades must be nearly medium in size. Now then, that limits the size so that there can be no small gnarled apples. As a matter of fact, it makes the No. 2 grade a good serviceable apple. That implies therefore that some fruit should go into an extra grade. The No. 3 grade is not defined; in that grade everything that growers may think is marketable is put. You will find sometimes a fairly good apple in No. 3, sometimes it is

perfect trash, for it is simply as the grower fancies. That is the system of grading, in brief, and the substance of Sections 4 and 6.

Section 7 simply says that the surface must be a fair indication of the apples all the way through the barrel. Note that, that the face of the barrel must be the same, practically, as the rest of the barrel all the way through. Now that is substantially the Fruit Marks Act. Of course there are sections there for the enforcement of it. There is the arrangement for the appointment of inspectors, there is the amount of fines, which is from twenty-five cents to one dollar a package in case of violations. Section 5 will show you that everybody who touches these apples is held responsible for them; the packer is responsible, the buyer is responsible, any one who handles them, any man in whose possession the apples are found is practically responsible for that barrel of apples. That looks like a very drastic section, but it has worked out fairly well.

How is it working out? I would like to give my personal opinion first, so that it may be disposed of, and because perhaps it is of least value, for I am right in the thick of the fight and may not see things unprejudiced; but whether I do or not, I am hardly likely to be given a great deal of credit, therefore it is useless to spend much time on my own opinion. Personally I think the Act is working out well; I believe it is doing a splendid thing for the fruit trade of Canada. I believe the Act is quite a practical one, and those who are responsible for it would not willingly see it repealed. I believe that it stands higher in public opinion today than it did six years ago when it was passed, and although it has not accomplished everything that its most enthusiastic friends had hoped for, it nevertheless has made such progress that it has won friends from among the classes that seemed most likely to be injured by it, if any particular class should be injured by it. So much for my own opinion. As to the opinion of others, we might take them in sections, because we will have to take this method in order to get at the working of the Act. What has been the opinion of the fruit growers? I think I can say candidly that with some few exceptions the fruit growers of Canada are unanimously in favor of the Fruit Marks Act. I have heard a few criticisms, but I would say that the great bulk of the fruit growers are enthusiastically in favor of the Fruit Marks Act. So much for the fruit growers. I need not dwell upon that, because I do not believe it will be seriously objected to.

Now then for the few growers who do object,—and I would like to explain by way of parenthesis, that the growers who object are only a few, so few, that I think I can safely refer to them as one or two,—they have said that they think the Fruit Marks Act is detrimental to their interests because they cannot sell apples now that they did sell formerly.

I believe that the fruit growers who say this are telling the truth. I believe that there are fruit growers in Western Ontario who two years ago allowed apples to rot in their orchards, who could have sold those apples had it not been for the Fruit Marks Act, and therefore, you might say, have a legitimate cause for complaint. But I do not say so, for I think in the end it works out to their benefit, and in those two counties today the apple growers are getting fifty per cent more for their apples than they would get without the Fruit Marks Act. They are actually doing that today. I am making an allowance of course for the difference in price for the different sections. That is to say, we had a class of apple buyers,—I think you have a similar class here,—not wholly responsible, who would go into the poor sections of the apple district, or where the orchards were smaller, where the fruit growers had no organization, or very weak organization, and buy the apples, crate them as best suited the particular man that made the purchase, and get rid of them at a price that gave them a profit. The only care of these buyers was to make a profit upon the particular deal, they had no interest in the apple buying business as a great commercial enterprise to continue from year to year, but simply an interest in that particular deal, to turn a dollar wherever they could turn it,—whether at the expense of the grower or at the expense of the purchaser of the apples, they did not care. These buyers found after the passage of the Act that they could not go into a district and buy up apples and mark them anything they had a mind to, and by buying these apples cheap thus be able to sell them at a good profit, therefore they gave up going into these sections; and as it was hardly worth while for a reputable buyer to go in there, those farmers for the moment found themselves with a lot of poor apples on their hands which they could not sell. To that extent the Fruit Marks Act has been a detriment to a comparatively few people in the country.

What has been the consequence, say to the better class of those people? First, it has forced them to organize themselves into co-operative selling associations, and I think I can confidently say that the Fruit Marks Act has been indirectly the cause of the great advance in co-operative movements in Ontario. This co-operative movement has been advanced undoubtedly by the action of the Ontario Fruit Growers' Association, by the action of the Provincial Government and by the act of the Dominion Department at Ottawa. All these agents have combined with the Fruit Marks Act, but I do not believe all these agencies combined could have accomplished these results or anything like it, had it not been for the action of the Fruit Marks Act; therefore, I say,

fortunately even for those who objected to the Act, it has worked out to their very great advantage.

Now with reference to the buyers. The buyers at first looked askance at the Fruit Marks Act, and scarcely one went into it with enthusiasm. Many of you who are familiar with Canadian affairs will remember that the Apple Shippers met in Toronto about the time this Act was put into force, that they rather criticised the new Act, and objected and hesitated to approve of the provisions. But now, after six years' experience with it, I think I can say with confidence that there are few of the large buyers, of the men in the apple business who are a credit to the commercial interests of Canada, that object to the Fruit Marks Act. On the contrary, many of them are its most enthusiastic friends. There is, however, a class of buyers—I say it without reservation—who do object to the Fruit Marks Act. There is an antagonism between the Fruit Division and that class of buyers, and it is a kind of antagonism that cannot be bridged over by any amount of soft soap, or any kind of flattery, or any kind of diplomacy that I can command. The class of dealers that I refer to are those that want to mark things just exactly as they have a mind to, who in a year like the present, when apples are small, want No. 1 apples to be small, and in a good year after they have bought up all the apples in the Province and practically have all in their own control, then they want the standard raised. Now, that class of people you cannot please by any law, and it is that class, and that class only, that object; while the great mass of our apple buyers,—men like McWilliams and Forest, and all men who buy and ship apples upon the same basis as our merchants in the dry goods business, in hardware and other staple products,—are not objecting to the Fruit Marks Act, but they are enthusiastically in support of this Act.

But what about the consumers? I speak here somewhat guardedly, and with reference to both the consumers and those who stand next to the consumers, the merchants in Great Britain, in saying that we have had some criticisms; but there is gratification at the improvement which has taken place in the quality and in the manner in which the Canadian apples are placed in the foreign market. I have with me here a selection from some of the letters which have been received by the Fruit Division with reference to this very point, and it may be of interest just to note one or two of these, as you very well know the apple trade in Great Britain is very closely organized, and consequently these letters come from men who consider seriously before they put themselves to paper. I made a few selections here, a few examples of what others are saying. [Letters were not furnished to the Secretary.]

I will not take time to read more of these, they are all in that same strain, showing the benefit of the Canadian Fruit Marks Act to our Canadian trade.

This may seem a little invidious, but perfect honesty to you compels me to read also this tribute to the Canadian Fruit Marks Act. This document which I hold in my hand does not mention the Canadian Fruit Marks Act, but of course I read the Canadian Fruit Marks Act into it. It is a report for 1906, one I simply picked up, a report from the selling firm of James Adams & Son of Liverpool. They sell regularly, as you very well know, large quantities of apples, and issue quotations day by day. Now, in their quotations you will find that they distinguish the various classes of apples, and here is the distinction which they make. They put in one class Canadians, then Boston and Maine, then Hudson River, Western States, Western New York, Nova Scotia, California and Oregon. In that classification you see they make distinctions. It is interesting to run down the prices, taking as an example—because it is common to most of them—the Baldwin variety. We find that the Canadian Baldwins range from thirteen to sixteen shillings on that particular day, Boston and Maine Baldwins range from ten to fourteen shillings, Hudson River Baldwins run from ten to eleven shillings, Western States Baldwins from ten to twelve shillings, Western New York ten to eleven shillings; and if you will go through the list, you will find that the Canadian apples are selling and have been selling for the last two years for from at least one to two shillings higher than the corresponding varieties coming from the United States. I do not mean to say that that is due wholly to the Fruit Marks Act, but it is curious to note that that difference in price did not exist before the Fruit Marks Act was passed, and came into successful operation, but it is true at the present time. I do not think that there is a large firm that does not make a distinction between the Canadian apples and all other similarly packed apples, and in no case, except one, do I find that the Canadian apples are below the American apples. In the matter of Greenings I find that the Canadian apples are lower than the American apples. By the way, I have found that the reason for that was your splendid system of cold storage warehouses, that kept your Greening apples in a perfect condition, while our Greening apples kept in barrel storage scalded badly, hence the difference in price.

Now I have briefly outlined what the Fruit Marks Act is, what people think of it, and I do not know that I care to say much more. If you are anxious to know anything about the details of how we work the Act and enforce it, I will be glad to explain that; but permit me to say this, that the Fruit Marks Act is an example to my mind of a type of legisla-

tion that should be much more common than it is, a type of legislation which the whole body politic is taking up as having a common interest, and where we use the machinery of government for the purpose of securing that co-operation which we find so beneficial to a limited degree just among a few individuals in particular counties or particular states. That is all the Fruit Marks Act is. The Fruit Marks Act was not passed for the purpose of making men honest; it had nothing to do with ethics, except the large question of ethics wherein all questions are ethical; it had nothing to do with morals; it was simply a mechanism whereby we secured that thing which is so essential in commerce, we secured a large quantity of goods that were uniformly marked and packed. That is all. It is not an attempt to make people moral by legislation, or anything of that sort, just simply a tool whereby we can do by law or, rather, whereby we can use the instrumentality of the law to take the place of a voluntary co-operative association, that is all it is. But though simply a commercial act you are justified in introducing this element of morals into it, because in its form it is a criminal law and under it no one can secure what you would think you could secure if it were a civil law, damages in case you are wronged. A man who violates this particular law pays a fine, he does not pay damages to the man who is injured, so that even the form of the law keeps up the fiction that it has to do with morals or ethics. As a matter of fact, it has to do with the commercial side, and the commercial side only of the business.

President Goodman: We will postpone the discussion until tomorrow. We want to have one more paper; Col. Brackett has the floor.

Colonel Brackett: Owing to the lateness of the hour, I think we had better postpone my paper until tomorrow.

Colonel Watrous: I do not think we ought to let this pass without letting the last speaker know how much we appreciate the information and encouragement which he has given us to go ahead and see if we cannot do something like it, and before this meeting closes I propose to try to inaugurate a movement, and place this Society in the way of trying to bring about something similar in this country.

Professor Hansen: Denmark is among the foremost nations in the world in the way of inspection; she has expert inspection. Her stamp means first quality in the markets of the world. At present the status of American apple culture is that the standard is regulated by the man who puts small apples in the center of the barrel.

Professor Munson (of Maine): Before we adjourn, I would like to have this matter that Colonel Watrous brought up a minute ago placed

in such a way that we will be sure to take it up. For years I have watched the development of this matter; I have had personal interest and professional interest. I have seen at various times the prestige of Maine as a fruit growing State decline to a certain extent, and at the same time the prestige of our Canadian friends has advanced. I have preached to the best of my ability the doctrine of care in packing and marketing fruits before our New England growers. Preaching does not go very far, however. I do not know that our Canadian friends will admit it, but possibly they do know that some of our New England friends accuse them of sending some of their poorer grades that they will not admit to themselves are worthy of Canadian approval, across the water as "Maine" products. Our friends in England say that we must pack our fruit better, we must grade our fruit better. They say the Canadians have a law which will govern the work of the whole country, but on this side of the line each state is independent. But a state law will be of no use whatever. There is some point in that. Maine may pass a law which will require the proper grading of fruit, Vermont and New York on the other hand may not pass such a law, and of course the law becomes inoperative in Maine. Now, it seems to me that the logical climax of the work of education in building up pomology in this country lies in this direction. If this Society can foster a movement for the national control of the grading of fruit, it will do a grand work in the direction in which it started some years ago. I believe that the talk which Mr. McNeill has given us is of very great importance as showing the actual value of a national movement for the control of the grading of fruits.

Mr. Munson (of Texas): It may be of interest to present a concrete argument. Last June my son was in Toronto, and he was so much struck by some packages of grapes grown in London, for sale in Toronto, that he purchased one of those packages and sent it home. It was a square package, probably eighteen inches square by five inches thick. It was so arranged that the two sides came apart by hooks or fastenings that could easily be taken apart and refastened for inspection. There was a tough paper first laid in on each side of the box, upon that a layer of excelsior, then upon that a sheet of cotton batting—a very thick sheet—and lying upon that were the clusters of Black Hamburg grapes done up in separate packages. A piece of this batting lay upon a piece of tough tissue paper, a cluster of grapes was then placed upon the cotton and that brought together at each end and tied in a bow knot, so that in a moment you could untie it, inspect the package, take it apart as you wished, and put it back in the form that you found it. This package arrived in Denison, Texas, in perfect order. I think there

were eight clusters. The grapes cost in Toronto \$1.00 per pound, and we did not regret the purchase, as it taught us a beautiful lesson.

Professor VanDeman: I was going to remark about the beautiful condition of the fruit that I examined in British Columbia. Two years ago it was my privilege to be called upon to judge the exhibits of the British Columbia Exposition, or Fair, at New Westminster, which is practically a part of Vancouver, and in all the course of my examinations there for nearly a week, I did not find a single mark of codling moth or San Jose scale, or any of the common pests that we have, on any fruit that was shown at that Exposition. I do not say that that was wholly or perhaps in great part the result of this Fruit Marks Act, but it certainly was true that they had none of these insects. Talking about the desirability of the exclusion from their markets of all packages from the United States in particular, and even from Ontario, they did not want any of the Ontario fruit to get there for fear of getting this insect, and I have no doubt that the rigid application of this Fruit Marks Act in Ontario has had at least some considerable beneficial influence upon the fruit which is grown in British Columbia, because if the codling moth or other pests had been transported to that region, that would have been noticeable to some extent there. I was most favorably impressed with the condition of things in that far Northwestern region, so far as the fine quality and character of the fruit is concerned.

Colonel Watrous: In order to test whether we are in earnest about this, and in order to bring this to a head, I offer the following resolution: "That a committee of five be appointed by the chair to confer with the United States Department of Agriculture with the object of securing the enactment of a national regulation intended to secure for us the substantial benefits conferred upon the Canadians by their Fruit Marks Act." I move its adoption.

Motion seconded.

President Goodman: The motion is before you.

Colonel Watrous: I wish to say a word in explanation. Any legislation which we may have must depend for its enforcement upon our Department of Agriculture, therefore any proposed legislation ought to be taken in communication and in harmony with the views of the Department of Agriculture, in order that it may have a chance of passage, and of being of the greatest use and the least harm after it shall have been passed, if we should be fortunate enough to secure its passage.

Professor Beach: I have long been heartily in favor of the purpose of this movement. It does not appear to me clear how best it might be accomplished, but I believe it can be accomplished, and in time it will

be accomplished. I am wondering whether it might not be well to enlarge the work of that committee so as to ask them to invite the co-operation of all State Horticultural Societies and of all Pomological Societies of prominence in the country in this purpose that we have in view. I will offer that as an amendment.

Colonel Watrous: I will accept it; write it in, that the co-operation of all other horticultural and pomological bodies be respectfully solicited.

Mr. Taylor: And trade organizations.

President Goodman: Good. Are you ready for the question for the adoption of the resolution with these amendments, which are accepted.

Motion was put to vote and carried unanimously.

President Goodman: I think that is a good step, well taken, at the right time.

Mr. White of Canada suggested that the next meeting of the Pomological Society be held in Toronto, thus giving the members a good opportunity to investigate the actual operation of the Fruit Marks Act.

Professor VanDeman stated that an invitation was on the way from Seattle, inviting the Society to meet there during the Exposition to be held in that city two years hence. President Goodman expressed the appreciation of the Society for the invitations extended, and stated that the matter would be referred to the Executive Committee.

Mr. Barnett extended a cordial invitation to the meeting of the Nut Growers' Association to be held on Friday morning.

President Goodman expressed thanks for the invitation, and declared the meeting adjourned until 9 A. M. the next day.

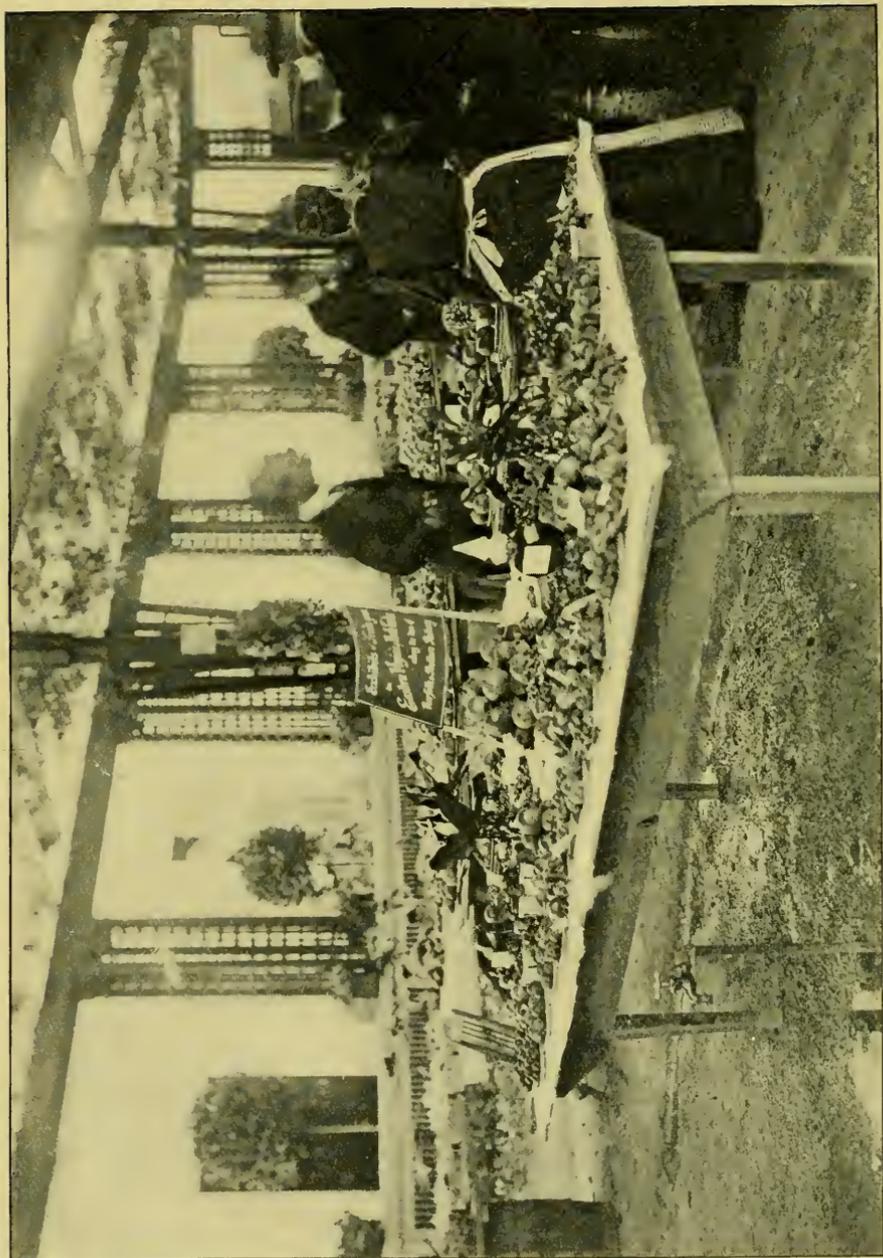
THURSDAY MORNING SESSION.

The meeting was called to order in Assembly Hall of the Inside Inn by President Goodman at 10 A. M.

REPORT OF COMMITTEE ON FOREIGN FRUITS.

G. L. Taber, Chairman.

Mr. President: As Chairman of the Committee on Foreign Fruits I solicited each member of the committee for contributions, and have the honor to submit herewith the result, in the shape of two papers from



DISPLAY OF FRUITS FROM EASTERN VIRGINIA AND NORTH CAROLINA.

D. G. Fairchild and W. T. Swingle, both of the Department of Agriculture.

Mr. Fairchild's paper is in the form of a letter to me and is as follows:

My Dear Mr. Taber:

Your letter of July 18th has been received.

With regard to a contribution for the report of the Committee on Foreign Fruits, it might be interesting to mention particularly the recent introduction by this office of the Chinese persimmon, which has been secured by Mr. Frank Meyer, our explorer now in China. Mr. Meyer is of the opinion that this Chinese persimmon will be hardy in the New England States. Professor Sargent, of the Arnold Arboretum, agrees with him in believing it to be a very hardy species and one likely to be of very great value in this country. According to Mr. Meyer's description, the fruit is of a deep orange color, about four inches in diameter, perfectly seedless, and in shape something like an acorn with its attached acorn cup; in other words, the upper half of the persimmon is larger than the lower, and separated from it by a groove. This makes the species, whose name has not been determined with certainty, probably a distinct one. Trees of this variety are now growing in several places in the United States.

In addition to this new foreign fruit, Mr. Meyer has been at work on the Chinese jujubes, of which there are a great many different varieties in China. As these are hardy well up into the North, they are likely to prove perfectly hardy in the Middle Eastern States. According to the researches which Mr. W. T. Swingle has made into the literature on this subject, there appear to be almost as many varieties of jujubes in China as there are varieties of prunes in France, and they play nearly as big a role in the economy of Chinese fruit culture. These jujubes are slit lengthwise by means of special instruments, are candied and then dried, and after being subjected to this process they deserve the name which has been given them in China,—the Chinese date. In fact, it would be advisable in their introduction to consider them as Chinese dates rather than jujubes, which name seems to have fallen into disrepute through its use in connection with the jujube paste.

Mr. Meyer's explorations have unearthed a large number of wild forms of pears, apples, peaches, plums, apricots, sandcherries, blackberries, currants, and other fruits, and it will be interesting to the fruit growers of the country to learn that we have succeeded in saving seventy-five per cent of all material sent in by Mr. Meyer, which includes over 900 shipments during the past year.

These explorations of Mr. Meyer are undertaken by the Department for the purpose of securing material which will be useful to the fruit growers of this country, and this may be an opportunity to call their attention particularly to the fact that the Department stands ready to instruct its explorer to secure material for any reputable plant breeder who will inform the Office of Seed and Plant Introduction of his requirements. It is of the utmost value often to receive from practical fruit breeders suggestions as to wild species or cultivated varieties in foreign countries which they are anxious to secure, and if any American fruit breeder wants to have imported for his uses bud material or seeds which he cannot secure through the ordinary commercial channels, the Office of Seed and Plant Introduction of the Department is the institution to which he should apply for assistance.

Mr. Meyer, it is expected, will remain in the field for another season, returning sometime the middle of next May. Through an arrangement made with Professor Sargent, of the Arnold Arboretum, his explorer, Mr. E. H. Wilson, who is now in the province of Sze-chuan, where he will remain for two years, has agreed to collect small quantities of seeds or scions of especial horticultural interest from the interior provinces of China. As this region is extremely inaccessible, and as Mr. Wilson is well known to the horticultural world, having been for several years the explorer of Veitch & Sons, any request for material which can be used by breeders will be placed in his hands, and he will be only too glad to give it serious consideration. As China is probably climatically more nearly like the Eastern United States than any other area on the globe, and as its resources are as yet little explored, the present opportunity is the best ever yet offered to the American fruit growers of securing from this rich plant region foreign fruit varieties for their work, and I hope that their attention has been strongly enough drawn to the matter.

The material imported by Mr. Meyer and Mr. Wilson will be propagated at our Plant Introduction Gardens in different parts of the country and from there distributed, as it is propagated, among the real experimenters,—preference being given at the outset to the State Experiment Stations and other state organizations.

Trusting that this will be of interest and can be incorporated into the report by the Committee on Foreign Fruits, I remain,

Very truly yours,

DAVID FAIRCHILD,
Agricultural Explorer in Charge
of Foreign Explorations.

The following is the report of Walter T. Swingle, his subject being:

THE INTRODUCTION AND IMPROVEMENT OF TROPICAL
FRUITS AS ILLUSTRATED BY THE DATE PALM.

We are apt to forget in comparing tropical fruits with those originated in temperate climate, that the latter has had the advantage of a couple of thousand years of culture by the most intelligent of human races. We can secure choice varieties of apples, plums, peaches, cherries and numerous other fruits from all parts of Europe as well as from China and Japan, to say nothing of the varieties originated in our own country. This is not true of tropical fruits. For the most part they come from regions where horticulture is in a backward condition and new varieties have originated but rarely and then by accident. I can best illustrate this by taking the date palm as an example.

For some three thousand years the date palm has been propagated in the Old World from offshoots and the best Arab horticulturists never think of planting a date seed. The only chance for new varieties to arise is by some shiftless Arab letting a few seeds sprout in his garden. So it happens that new date varieties arise only very rarely and there has been no systematic attempt to improve the date. As a matter of fact, the date is as close to its original wild ancestor as is for example the American plum which has been cultivated only for a century or so. Of course the date palm has a wide range of culture, being grown all the way from western Morocco to eastern Baluchistan, and from southern Nubia and southern Arabia, on the south, to central Persia and Mesopotamia on the north. Throughout this immense region, comprising the principal deserts of the Old World, it is grown wherever there is sufficient water or irrigation or wherever the roots can reach a layer of constantly moist earth. It is not surprising that a culture so widely spread and so old should have as many varieties, even if they have originated in an accidental way as indicated above.

I estimate that something like one thousand varieties have been recorded in publications of various European writers, and I estimate that in reality there exists about two thousand or twenty-five hundred named varieties of dates of fairly good quality. It must be remembered, however, that the Arabs prefer a type of date almost unknown to us, namely, the dry date. These dates, when ripe, are as hard as nuts and can be kept indefinitely if protected from weevils. These are considered more healthy for everyday consumption than the soft dates of the sort we commonly use. A good many dry dates, as liked by the Arabs, would not appeal to American palates, so we can at once root out half of the known varieties. Some eight years ago, I began in north Africa a sys-

tematic search for the best varieties of dates for introduction into America, having been assured by Prof. Tounney that he would be able to arrange a co-operative date garden in Arizona where they could be cared for. This work has been carried on uninterruptedly since then with the co-operation of Mr. David G. Fairchild and Mr. Thomas H. Kearney, Mr. Fairchild having personally visited the oases of the region along the Euphrates river, and having secured through friends varieties from Arabia, Mascat and Baluchistan. Mr. Kearney has visited Egypt and also made a special trip to the date oases of southern Tunis. My own investigations refer largely to the southern part of Algeria, and through Arab acquaintances, to the eastern border of Morocco. Altogether we have introduced into this country something like a hundred and fifty named varieties of date palms, which is considerably more than are found in any one oasis in the Old World. It must be remembered that these are the choicest varieties; in other words, we have not imported the inferior sorts to be found in the Old World.

It must be said, however, taking into account the peculiar climatic conditions prevailing in the Southwest and the demands of the American date eaters, that very few of these varieties are really suitable for commercial culture on a large scale. Probably not more than a half a dozen could be recommended without qualification. There are perhaps a dozen more which could be recommended if it were possible to obtain offshoots, but I need not remind you, that the date palm is propagated entirely by offshoots which take four or five years to reach a sufficient size to stand transplanting in the way it is now practiced. This means that we must have access to large date orchards in the Old World planted to a single variety, in order to obtain a sufficient number of offshoots to start a good sized plantation in this country without delay.

This condition of affairs, namely, the small number of varieties we could recommend for culture in the United States and the difficulties of procuring offshoots even of varieties which can be obtained in large quantities, led me to propose the breeding on a large scale of new varieties better fitted to our peculiar conditions than those of the Old World. Our present plan is to import from all parts of the Old World seeds of the choicest known varieties of dates. These can often be obtained from regions where it is impossible, for lack of proper transportation facilities, to secure living offshoots. These seeds of choice dates are distributed free to settlers in the Southwest, where the climatic conditions render even remotely probable the successful culture of the date. Instructions are sent to each recipient of the seed and in general, the plan is followed of planting the seed thickly in a seed bed and transplanting the following year to rows about thirty feet apart, putting

the palms about four to six feet apart in the row. They are planted thickly in the row because fully one half of the plants turn out to be males and must be dug up as soon as they flower, and of the remaining date palms which bear fruit, not more than half bear fruit sufficiently good quality to compete with the sorts now imported to this country. From a few small experiments which have already been made in California and Arizona, it is believed, however, that a small proportion of the seedling dates will be of very superior quality, perhaps better adapted to our own conditions than any we can import from abroad.

It is proposed, therefore, besides digging out the male palms at the end of say the third year, when the plants first flower, to remove the least valuable of the seedling palms at the end of say the fifth year, when they come into bearing; to further make a distinction between the remaining fruitful palms, between those which bear a fruit fairly marketable and those which are of promise of being a superior variety. Those which yield barely edible fruit will have all the offshoots stripped off them to force them into bearing as much fruit as possible. On the other hand, those which yield good fruit will be allowed to push offshoots so that these sorts can be propagated. As soon as offshoots are ready for transplanting they will be set out in places where the widest gaps occur in the rows; for in some cases, four or five male palms will doubtless grow together and will, upon removal, leave a wide gap in the row. Then when the gaps have been filled the poorest of the palms will be cut off and replaced by offshoots from the best. The replacing of poor by good will go on until the whole orchard is brought up to a fairly high level of quality.

In the meantime, the planting out of a seedling date orchard constitutes the planter a co-operator of the Department of Agriculture, and entitles him to a certain number of imported date offshoots as a bonus. It is the intention to make this offer of imported date offshoots a sufficiently large one practically to insure the planter against loss even if all the seedling dates which he plants should turn out to be of no value. The present arrangement is to give one or two imported offshoots (depending upon the rarity of the variety), for each two hundred and fifty dates set out in accordance with the plan mentioned above. This amounts to something like six rare offshoots or twelve of the more common kind for each six acres of seedling dates set out. These offshoots will be large and vigorous and come into bearing some three years after being set out, and yield themselves offshoots some five years after being set out. With such a plantation as a nucleus, a considerable orchard of imported varieties can be built up after some eight or ten years, since

after the fifth year each imported offshoot yields one offshoot a year which can be transplanted.

Already some hundred and fifty thousand date seedlings have been planted during the present season, and it is believed that within two years five hundred thousand dates will have been set out in the southwestern states from Texas to California. In the meantime co-operative and Departmental date gardens have been established at one point in Texas, two in Arizona, and two in California. In these gardens the imported offshoots are propagated so that sufficient offshoots will be available for distribution to co-operators.

Let us reflect a minute what five hundred thousand seedling dates will mean. It will mean, first, there will be about two hundred and fifty thousand date palms produced which will yield fruit, and of these, some fifty thousand will yield fruit of sufficiently high quality to be marketed in the United States. It is my firm belief that fully one thousand of these will be equal to the choice varieties we are now importing, and a hundred or so will be superior to any we now know from the Old World. It will then become our aim to learn methods of rapid propagation so that we can multiply these choice varieties as fast as possible, and ultimately grow the choicest dates in the world in the American date plantations. It has been stated before that the climate from Texas to California is just as well suited to date culture as in any part of the Old World.

WALTER T. SWINGLE.

August 10, 1907.

HISTORY OF FRUIT GROWING IN FLORIDA.

H. Harold Hume.

To the student of pomological history, Florida is interesting. Interesting because of the wide range of fruits grown; interesting because of the evidences of the strong amateur spirit which one meets on every side; interesting because of the successes and the failures.

The history of Florida pomology goes back to the beginning of European civilization in America. The Spaniards led by Ponce de Leon first landed upon the east coast of Florida in 1513, and from that time until 1821 they retained a more or less precarious hold on the country, except during the years 1763 to 1783, when the state, with other territory, passed under the control of Great Britain. It was during the Spanish regime that many fruits were introduced. The dates at which they were first brought in and the names of the introducers are not known.

They are covered up, lost to view in the historical debris of explorations, Indian wars and petty intrigues.

Today the important fruits from the standpoint both of the amateur and the commercial grower are the citrus fruits (oranges, pomelos, mandarin oranges, lemons, limes and kumquats), pineapples, peaches, mangoes, avocados, guavas, pecans and persimmons,—all are exotics, all have been introduced. They are strangers on a congenial soil, it is true, yet strangers nevertheless. In Florida no fruit native to the state has attained to any prominence, nor is any likely to.

The oranges of Spanish introduction are the sweet oranges, and the two bigarades, sour and bitter-sweet. Of these, we are probably safe in saying that no plants were introduced, only seeds and fruits, and they doubtless came direct from Spain. At first they were planted about the Spanish settlements. When they came into bearing, fruit was secured by the Indians, who carried it with them on their journeys. The seeds were dropped where the fruit was eaten, resulting in natural groves in many parts of the state. These were located mostly in hammocks on the shores of lakes and rivers. Thickets on which hundreds of trees were to be found on an acre were not uncommon. These were composed in practically all cases of sour and bitter-sweet oranges. Many of the early groves were made by transplanting these trees, setting them in orchard form and top-working them. Wild sweet orange groves were much less common, but one of them at least is worthy of note, because from it came the strains of fruit from which the early reputation of the Indian River oranges was made. How old it was or when it was planted, no one knows. But in 1832, the Indians brought sweet orange fruits to John Sheldon, one of the Indian River pioneers. They would give no information as to where they had secured them, but Sheldon on one of his hunting trips found the grove in the Turnbull Hammock back of Hawks Park, Florida. Six hundred sweet orange trees were taken up from this natural planting and moved to his (the Sheldon) place on the river front, three and a half miles south of Hawks Park. This property is now known as the Packwood place. The Dummit grove, one of the famous Indian River groves, was largely budded from this Sheldon grove. From this strain has come such varieties as Dummit, Indian River, Madam Vinous, and Old Vini.

To this Spanish strain of oranges were added later other varieties from the Mediterranean countries and elsewhere. With the introduction of these later varieties were connected the Thomas Rivers nurseries of England. S. B. Parsons of Flushing, Long Island, who established a nursery on the Saint Johns' River in 1869, the late General Sanford, Mr. E. H. Hart, and Mr. A. J. Bidwell.

The pomelo was probably of later introduction than the oranges, and I rather incline to the view that it came from one of the West Indian Islands rather than direct from Europe. The name "grape fruit" originated in the Antilles. For years, even centuries, its merits were unappreciated. It grew luxuriantly, but the fruit was allowed to rot on the ground. But people from other parts of the country came to Florida and learned to know and like the fruit. Between 1880 and 1885, the first shipments were made, and netted about 50c per barrel. Today it stands without an equal, the dessert fruit for the American breakfast. Its culture has extended so rapidly that it equals the orange in importance in many sections.

Lemons represented, not by modern varieties but by the Rough or Florida variety—a lemon unto itself—were also introduced by the Spaniards. To this day it grows well in the woods of the extreme southern portion of the state. Where it came from we do not know. It is scattered throughout the West Indies; it occurs under natural conditions in the Transvaal, South Africa, and perhaps elsewhere. It is valuable only as a stock on which to work other varieties of citrus, and is adapted to the high pine land and rocky soils. The history of the lemon is the history of the lime, which today reaches its greatest perfection on the rocky keys of the lower east coast of the state.

The remaining species of citrus are of much more recent introduction, hence we know a little more about them. The mandarin orange was first introduced into Louisiana between 1840 and 1850, then into Florida by Major Atway. Dancy, one of the most important varieties, was introduced by Colonel Geo. L. Dancy of Buena Vista, in 1871 or 1872. Satsuma, the hardiest of the group, and by far the most important orange in Northern Florida and westward around the Gulf, was introduced from Japan by Dr. Geo. R. Hall in 1876.

The kumquat, unique among our citrus fruits, was first known in America about 1850. That this early introduction, mentioned by Mr. A. J. Downing, was in any way connected with the present culture of the fruit in Florida is very doubtful. Its culture there began, so far as we know, with the importations of G. L. Taber and of Reasoner Bros. in 1885.

PINEAPPLES.

So far as we have been able to find out, the first pineapples produced in Florida were grown by Mr. Benjamin Baker of Key West, from slips obtained in Havana about 1860. His first small planting was on Plantation Key, though by 1870 there were numerous other plantings on adjoining keys.

At the close of the Civil War abandoned plants set by a Mr. Brontley at Brontley on Merritt's Island were found. Between 1870 and 1880, small plantings of pineapples were made at numerous points along the Florida east coast. Captain Burnham started a plantation at Cape Canaveral in 1870, and Major Magruder at Rockledge put out one at the same time; and scarcely a settler on the river front was without his small planting. The fruit was used at home. In 1879 Mr. Jas. H. White, of Malabar, Fla., shipped his first pineapples to a distant market.

It will thus be seen that conditions were well developed for the new industry. Pineapples had been tested at numerous points and found to succeed, and all that was now needed was a demonstration on a large scale, and a means of getting the fruit out of the country quickly. The opening of the East Coast Railway afforded the opportunity for marketing, and the late Thos. E. Richards of Eden, Fla., made a large planting which met with a fair measure of success. In 1880 he procured 28,000 Spanish pineapple slips from one Tom Johnson, and planted them on the beach side of the River. The fruit produced was destroyed by bears, so all the plants were lifted and moved across the river to the point now called Eden. An additional planting of 20,000 plants was made, and in three or four years a planting of very considerable proportions was established.

Captain Richards' work counted, for others took hold of the industry; and today, after a period of only twenty-seven years, it is one of the most considerable in the state. For miles one may ride in a railway coach through fields of pineapples.

The industry was started at other points under sheds, as at Orlando, St. Petersburg, Punta Gorda, and elsewhere. The fruit had to go out by express, and was compelled to carry all the charges the traffic would bear; and today the shaded pineapple industry at these islands is past history. Express companies are powerful factors down in Florida!

PEACHES.

Peach culture in Florida began centuries ago with the introduction of that group of peaches commonly referred to as the Spanish. This same strain of fruit is known in other southern states, in Mexico, and in many of the Latin American countries. These were found in a wild condition in the northern and western part of the state. Characterized by hard, solid flesh, which in many wild varieties never softens except by rotting, and by little variations from these characters in the seedlings, the group has not received much attention, and only a comparatively few varieties are listed by nurserymen. We are safe in saying that they possess vigor of constitution much greater than the exotics.

In Florida, peach growing made poor headway until the introduction of the Peento and Honey peaches. Both of these were brought into the south about the middle of the past century by Mr. P. J. Berckmans, Augusta, Ga. When taken hold of by Florida growers, notably Mr. G. L. Taber, Glen Saint Mary, Fla., and Mr. T. K. Godbey, Waldo, Fla., these two varieties became the progenitors of the long list of meritorious varieties with which the industry has been developed. Previous to their introduction a peach industry was not possible in most parts of the State, as the Persian and Chinese cling peaches cannot be grown except in the western part.

Peento peaches were first introduced by William Prince of Flushing, New York, sometime before 1829. These, however, were lost. The original tree of the variety now known as Peento was grown from seed obtained from Australia in 1869.

We owe the introduction of the Honey peach to one Dr. J. T. Devan, who in 1846 sent Honey peach pits from Canton, China, to his friend John Caldwell, at Newburg, N. Y. These pits were turned over to Mr. A. J. Downing, who raised the Honey peach and sent scions to Mr. Henry Lyons of Laurel Park, Columbia, S. C. The first fruit was borne in 1856. In 1857 Mr. P. J. Berckmans of Augusta, Ga., propagated a few hundred trees of the Honey peach for Mr. Lyons. In 1858 Mr. Berckmans bought the entire stock and the right to propagate. Thus the Honey peach found its way into Florida.

President Goodman: Dr. Gifford, from Florida Keys, have you a few words on southern fruits?

Dr. Gifford: I have not been in the fruit business long enough to be able to give any information about growing. I came here to listen rather than to talk on fruit. My specialty really is in the line of forestry, and I have been recently engaged in the cultivation of the lime on the Florida Keys. I do not know that I can say anything special, unless there is some question that I can answer on the lime. We have also been growing the sapodilla. There is one thing of interest in connection with the sapodilla. I went into the forest of Mexico this spring and made some investigation of the chicle, the fruit of the wild chicle tree of Mexico, which it seems to me is the same thing as the sapodilla which grows upon Florida Keys; and it has occurred to me that the green sapodillas should be picked and the juice squeezed out of the green fruit instead of having the tree abused. The trees are being killed in Mexico by the Indians, who are anxious to make all the money they can while the price of chicle is high, and it seems to me that the chicle tree could be saved if the chicle is produced from the green fruit. The

sapodilla is to me one of the most remarkable fruits in the world, because that puckery, sticky stuff can be chewed for hours, when it suddenly is converted into sugar, and makes a very delicious fruit. It seems to me that whether or not there is a sale for the sapodilla, that it can be used, because there is a great demand for chicle,—it is constantly in demand. One firm in Rochester offered 25 to 35 cents a pound. The American Chicle Co. is a trust, and the stock is offered for sale on the New York Stock Exchange. It is estimated that one million and a half dollars' worth of chicle is shipped from Mexico alone each year.

Secretary Craig: What about the lime on the Keys?

Dr. Gifford: That has been of interest because of the remarkable hardness of the lime. It is one of the few fruits that you can go away from and leave. Of course you can find limes in the Keys on land which has never been cut over, virgin land, and they will grow there and are highly productive. I had a plantation of five acres on Elliott's Key. The ocean waves in a storm over a year ago spread over it a depth of five feet of salt water; that was followed by a flood of fresh water, and that by a terrible hurricane that wrenched the roots. Then came a drought of seven months' duration without a drop of rain, and I concluded that the lime business was about finished. But I received a letter from my man saying that they had sprouted up from the roots, and some of the old trees had at least twenty barrels—the whole crop—so they are recovering, and it seems to me it is a remarkable fruit when we consider what it will stand. It needs no cultivation, except cutting down weeds, and does so much better than the lemon that it should be propagated instead of the lemon. It contains more juice for its size than the lemon, has less rind, is more aromatic in flavor, and is just the right size to go with the gin ricky and other drinks popular in clubs; and since this drink is sure to continue, it is bound to make a demand for the lime. There is no budding or anything with the lime; simply raise a little seed, stick that in the rocks and they will grow. You can raise them in all seasons. Of course, you have to have rocks with a little bit of vegetation. The lime plants are planted with a crowbar and cultivated with a hatchet, that is about all there is to it, and they will bear a crop.

Professor VanDeman: There is one thing I would like to say about the propagation of the mango that we dug out from experience in the Station at Florida. Instead of using the trees inarched from the bearing trees of known good character, we have these little trees standing in pots and scaffolded up and prepared so that they may be inarched to the branches of the trees. We plant the mango seeds where the tree is to grow, and use these inarched trees in the large pots as mother plants, plunging those large pots, which are almost tubs, in the ground beside

the seedlings and inarch from those trees to the seedlings. When they have united we of course cut them away and use those plants as other mother plants for other inarched seedlings. Now this is the point, that anyone who may be engaged in the cultivation of anything that is so extremely difficult as the mango, will find what propagation can do, not only for the mango, but for other fruits.

DO PRESENT COMMERCIAL STANDARDS PROMOTE FRUIT CONSUMPTION.

Wm. A. Taylor, Pomologist in Charge of Field Investigations,
U. S. Dept. of Agriculture.

In recent seasons of average yield, the commercial producers of most of the fruits grown in the United States and Canada have been more acutely interested in the probability of finding good customers for their products than in securing larger crops. For a considerable period commercial fruit planting appeared to forge ahead of increase in consumption, so that not a few planters have been discouraged by the outlook, somewhat to the detriment of their orchards and vineyards, through the conviction that production has outstripped consumption and that an indefinite era of ruinously low average prices for most fruits was confronting them.

Consideration of the various phases of the economic situation as now understood does not, in the judgment of the writer, confirm this view of fruit culture in general, though the very heavy planting of a few popular sorts of rather indifferent quality, such as the Ben Davis apple, Elberta peach and Keiffer pear, in some regions gives rise to some apprehension in that direction.

The growing appreciation of fruits among all classes of our population, and the fact that fruit of some sort now constitutes a regular item of the daily bill of fare on the home table, as well as an appetizing morsel between meals, indicates that with continued improvement in methods of packing, transporting and distribution, we may reasonably expect a corresponding increase in fruit consumption per capita, provided the products offered are of tempting quality and attractive appearance, and are placed in the consumer's hands in sound and wholesome condition.

In the neatness and attractiveness of package and packing, there has been unquestioned improvement in the average practice of growers and shippers of most fruits in most sections in recent years. While there is still much room for improvement, the average rating of the

visible supply in any of our larger markets, especially of that large portion of the crop which goes to market by rail or boat in packages, rather than in bulk or in the owner's wagon, is much higher than before the gift package came into general use in our fruit trade. Whether the purchaser actually purchases a full barrel, box or basket, or limits his purchase to the quarter peck, the dozen or pound, if other things are equal, he is likely to buy oftener and in larger quantities if the product is presented steadily in attractive form. Present tendencies in the important matter of packages and methods of packing in so far as they tend toward neatness and attractiveness without deception as to quantity or quality of contents, undoubtedly promote consumption, and are in the interest of the producer.

In certain other respects, however, the outlook appears less assuring. One of the most important of these is the matter of proper maturity of the fruit. As the distance of shipment has increased through the development of steam transportation, there has been an apparent increasing tendency among shippers to reduce the risk of decay in transit by harvesting and packing the more perishable fruits considerably in advance of proper maturity. Peaches, plums, cherries, and even the small fruits and early apples are not infrequently sent to the markets so unripe as to render them unsatisfactory to the deluded purchaser, and in fact so unwholesome as to warrant their condemnation by the health officers. While this practice is usually more conspicuous in the case of the case of the earlier ripening varieties and from the more remote regions, it is by no means limited to such, and, in the judgment of the writer, operates to retard the consuming demand for dessert fruits in our markets more than almost any other cause, except insufficient supply and prohibitive price.

One basket or prematurely picked peaches or grapes, or a single dozen sour oranges mistakenly purchased by the average consumer, does more to discourage future purchases by him than even abnormally high prices for fruit that is palatable and of fair quality. The risk involved in permitting most fruits to attain a moderate degree of ripeness before harvesting when they are properly handled, has undoubtedly been greatly overestimated, and commercial practice must undergo decided modification in this respect before much further development of fresh fruit consumption can be expected in either domestic or foreign markets. Greater care in handling, coupled with quick cooling and adequate and suitable facilities for transportation, are essential to the further growth and continued prosperity of most branches of the fruit industry.

In a recent consideration of fruit grade standards as affecting the consumer, the writer has been struck by the tendency to emphasize size

in formulating and applying such standards at the expense of the other important characteristics that go to make up that composite whole which pomologists designate as "quality" in fruit. Even in the generally accepted apple grades of the Eastern United States, size determines grade to larger extent than any other factor, while in some of the most faithfully observed peach grades that are being used, size dominates all the other factors involved. This is true even to the extent of ignoring those distinctive and essential characters—color and flavor—which are commonly suggested by the appearance of the name of the variety upon the package.

Under this plan, all varieties with one or two important exceptions in favor of conspicuous varieties, such as Elberta, are branded simply "AA" "White or Yellow," or "A" or "B" grade as the case may be. With the "AA" standard set for "Elberta" size, the fruit of St. John or Barnard is necessarily branded as of the lower grades, such as "A" or "B," notwithstanding their higher flavor and greater intrinsic value. This tendency, while by no means universal, is fairly typical of much of our commercial fruit grading practice, and it not only results in disappointment of the consumer but unfairly against the grower of the smaller varieties of higher quality. At least this is true until the consumer learns that the smaller fruit is actually the more valuable, provided the variety be right. The most serious ultimate effect upon the industry is through the fact that it tends to discourage the planting of the medium sized and smaller sorts, except where their superior hardiness or productiveness counterbalances the disadvantage they encounter in the market because of their smaller size.

The restriction of varieties in commercial plantings to a comparatively small number is unquestionably correct economic policy on the part of both producer and handler, but let them beware the day when they can offer the consumer only large varieties of indifferent quality or worse. If the unwilling horse, though led to water, cannot be compelled to drink, what hope is there of stimulating fruit consumption by restricting the offerings to consumers to the less palatable sorts.

The apparently increasing tendency to send Gano to market as Jonathan, or Illinois Ben Davis as Kansas Queen or other newly coined appellations, indicates that consumers are beginning to show indication of a disposition to discriminate in favor of high quality and against known mediocrity. Should not farsighted commercial fruit growers emphasize more strongly than has been the case in recent years the superiority of their high grade varieties for particular uses. Why should Red Canada or Northern Spy go to market at the same price as Baldwin? Is there not need of education of the consuming public on this line

through the medium of the press and the placing of stronger emphasis on quality in the marketing of the product?

President Goodman: Friend Taylor has made the one point that I remember Marshall P. Wilder made thirty or forty years ago, that the American Pomological Society should never degenerate into a commercial body that would advocate the growing of apples without quality, just because money could be made out of them. The paper is before you for discussion.

Professor Van Deman: There is one variety that I think is pretty well established in the market for its high quality, and that is Grimes. In Washington City, where I live, the Grimes is selling at this time for \$5.00 a barrel for the good grades, and the poorer grades are selling for about \$3.00 to \$3.50—the second grade. People are beginning to know what a Grimes apple is, and in many of the markets they know what the Jonathan is. The eastern market is not so well acquainted with it, except New York City, but it is certainly something that we ought to give more and more attention to, to try to educate the people on the difference between a good apple and a poor one; or any other fruit, between one of poor quality and one of high quality. I think the people are learning.

Colonel Brackett: Here is a Stayman Winesap, the quality of which is extra fine. A friend of mine has been shipping it out in small quantities to individuals for their own use, and the demand has increased so rapidly on account of the quality alone that he cannot begin to supply the demand from his orchard. It is another illustration of the fact that people do not eat with their eyes, and if they buy apples like the Grimes *Golden* or the Winesap, they are getting the quality every time.

President Goodman: Is there anything further on this subject? If not, we will pass to Colonel Brackett's paper on Nomenclature.

REPORT OF COMMITTEE ON NOMENCLATURE.

G. B. Brackett, Pomologist U. S. Department of Agriculture.

Happily conditions now exist in which this Society can, at least to some extent, emphasize and demand an enforcement of a purified and corrected nomenclature of our cultivated fruits. Indeed, to accomplish this end was the main and leading object of its existence, as a careful study of its records will clearly show. Much as has been accomplished, however, by it and kindred organizations in the fifty odd

years of their continuance, there has never been that cordial co-operation of effort that should have existed in order to produce the best and most satisfactory results, for the simple reason that until within recent years there has been no especially and generally recognized head to our American system of fruit nomenclature. Robert Manning, than whom no more careful and painstaking collector and cultivator has lived, said in the introduction to his "Book of Fruits" published in 1838: "The innumerable errors in the names of fruits are inconceivable to any but a collector. It is very desirable that there should be some acknowledged standard, to whose authority, in doubtful cases of this nature, we might appeal." This is a correct and very clearly stated acknowledgment of facts that then existed, and a strong appeal for better conditions which he hoped might follow, and if the great Wilder had any one trait of character that dominated all others, it was his never ending desire to see our nomenclature and synonymy purified and redeemed from its thrall-dom of error and confusion. This fact abounded in all his public and private utterances. One example follows, which is taken from his address as President of the Society, which was delivered before the biennial meeting in Chicago, Illinois, in September, 1875:

"NOMENCLATURE AND SYNONYMY."

"Allow me to call your attention for a moment to the importance of a correct nomenclature for our fruits. This was one of the objects for which this Society was instituted. This is still its manifest duty, and should not be neglected. Much has been effected in this respect by the unwearied labors of the Committee on our Catalogue, as well as by writers of papers on the synonymy and nomenclature of particular varieties, which have been published in our proceedings. Besides these, we have the investigations of Manning, Downing, Thomas, Barry, Hovey, Warder, Berckmans, Elliott, and others who have devoted long lives to clearing up the confusion which existed in the nomenclature of our fruits, and whose efforts have, to a great extent, been crowned with success. We are aware of the difficulty of changing long established names, which, though erroneous, have almost acquired a hereditary claim to use; but as a proof that it is not impossible, we may mention the White Doyenne pear, which when this Society was instituted was known in New York as the Virgalieu, in Boston as the St. Michael, and in Philadelphia as the Butter Pear, to say nothing of its thirty European synonyms; but now, through the persevering labors of pomologists, is known throughout this country, as well as in Europe, by one standard name. The report of our committee on this subject, presented at our last session by the chairman, Mr. Thomas, is a step in the right direction,

and should be followed up, particularly by such investigations of the history and synonymy of popular varieties as the elaborate papers presented by Dr. Howsley at the session of 1871. Let us all co-operate in these laudable efforts, and we shall ere long make the nomenclature of our fruits as correct as that of any of the other sciences.

"The importance of a correct nomenclature will be appreciated by those who recollect the many efforts to procure the true 'Beurre Spence' pear, and many disappointments from the receipt (from Europe) of worthless varieties for it, before it was discovered that the pear which Van Mons extolled so highly under this name was no more nor less than the Flemish Beauty. Had we known that the variety so long sought was one which we already possessed, we should have been spared a world of trouble and expense and disappointment."

We have already acknowledged the existence of many difficulties that, desirable as the remedy was, until recently stood in the way of the accomplishment of the great object so diligently sought by our worthy predecessors, but a lack of co-operation may be mentioned as first and greatest. No one individual author or even organization has felt able to hunt up and bring together in any one publication a complete, or anything like complete, synonymy of even one class of our domestic fruits. Such a work can only be performed by our general Government with its almost unlimited resources, and this is now being accomplished under the fostering care of the Bureau of Plant Industry of the U. S. Department of Agriculture through a series of bulletins, one of which is now before the public.

One difficulty, and only one, seems yet to stand in the way of ultimate success in our great desire, and that is ably referred to by Colonel Wilder in the above quotation from his Chicago address: that is, the " * * difficulty of changing long established names, which though erroneous, have almost acquired a hereditary claim to use." But we are persuaded that, as in case of "White Doyenne," it may be accomplished if we persevere. But if we, as members of this Society and as would-be leaders in this great reform, will persist in calling the Oldenburg apple the "Duchess," or the Angouleme pear the "Duchess," how can we expect the "laity" to fall in with the reform?

President Goodman: The paper is before you for discussion. Is there any question you would like to ask Colonel Brackett, or any statement anyone wishes to make in regard to this topic?

Professor Hansen: I believe heartily in the suitability of names, and a fixed system of nomenclature for all our fruits. I believe,

speaking for the Mississippi Valley, that this Society made a mistake when they took the name "Oldenburg" instead of "Duchess" for that famous apple. I think it would have been better if we had kept the first part of the name and called it the Duchess. The "Duchess" it will be to the end of time in the Mississippi Valley, as long as you cultivate that apple. You cannot get people to say anything but "Duchess." They know nothing about the Duchess pear; it is only in a small part of the United States where that can be raised, and I am not at all sure but what this Society can reconsider that action and keep the name Duchess for a thing that is worth a thousand times more than anything else that has the Duchess name to it, like the Duchess pear or the Duchess grape. The last two are as one to a million compared with the importance of the Duchess apple, so that I think it would not do any harm for us to acknowledge that we have made a mistake for once, and give the name "Duchess" to the fruit that will always bear the name Duchess.

Colonel Brackett: Who first made the mistake?

Professor Hansen: I do not know. I would advocate giving the name Duchess to the thing that has the most economic importance, and that is the apple.

Colonel Brackett: Well, it is a well established rule of the American Pomological Society to have all fruits named as simply as possible, to have simply one name, and in order to avoid that conflict between the apple and the grape and pear, the Pomological Society decided to call the "Duchess of Oldenburg" the Oldenburg, and the Duchess of Angouleme pear the Angouleme, and that explains it to every one and there is no conflict. The Duchess grape will stand, as that is a simple name, that has always been given that fruit.

Professor Van Deman: I fully agree with Colonel Brackett in everything he said in the paper and on the floor, and yet it is almost like butting our heads against a stone wall to stem the tide of popular opinion and popular practice in naming many of these things. For instance, we have a very notable example in the famous orange that every one calls the Washington Navel, and yet it is the Bahia. It was named Bahia by Mr. Saunders, who imported it from Bahia, Brazil, and I fought the fight of my life when I was in Washington to try to have that thing changed, but "Washington Navel" it will be to the end of time, and we might just as well submit and call it so,—I agree with Professor Hansen in that. Of course we pomologists who understand the thing scientifically can keep on calling it the Bahia orange, and that is as far as it will go. The same thing may be said about the old Janet apple; it will be the Janet apple the whole country over, and I am in favor of modifying in some reasonable degree the rule, and giving way to some

of these popular things; but it is all right to hold the line as strictly and as tightly as we can.

There is one point in the paper that should be observed, with regard to the name of the Duchess apple; we have a Duchess pear and a Duchess grape. Now it is correct according to the rules to give the same name, as for instance in this case the Duchess, to an apple and to a pear and to a grape. That is all right, the same name for all three fruits, or a number more. We have plenty of cases of that kind in which pears and apples and grapes and other fruits have had the same name, and it goes all right; but the matter of duplicating these names is a very serious thing, and it ought to be avoided whenever it is possible. I do not even believe in giving the same name to varieties of two separate species of fruit if it is possible to avoid it, for all that tends to cause confusion.

Professor Hansen: Just a word more. We can have any system of naming that we please, but it would be better,—we would "save our face," as attorneys and officials say,—if we would also find out what is most needed. We can never change the name of the Duchess apple, so what is the use of keeping that good short word for a grape that is not cultivated to any extent, or for a pear that is out of cultivation—or will be, on account of the pear blight?

Professor Van Deman: That is all right, those are different species.

President Goodman: We have a Committee on Nomenclature, and this question really ought to be referred to that committee.

Professor Hansen: I will accept that.

President Goodman: Will you make a motion that it be referred to that committee?

Professor Hansen: This Society is making itself rather ridiculous on that point of the Oldenburg apple, because it has not been called that for ten years.

Colonel Watrous: It seems to me that there is another word to be said on that subject. Suppose that a great many people do persist in calling the Oldenburg apple the "Duchess" while the rule of this Society says that it is Oldenburg, I believe that here is the place of the origin of the name. Suppose that a good many people refuse to follow a natural and sensible and wise regulation in that respect, shall we break over, shall we spoil the effect of this general law because a good many people break it in one region? It is not every one that does it,—I think the Professor goes a little too far in saying that everybody does it; but the fact that people refuse to conform to a wise and properly made rule is not in my judgment a sufficient reason for abrogating the

rule, because if you abrogate a wise rule in one case because it is disregarded, why not in other cases? People commit burglary, and yet we will not repeal the law against burglary; even if people commit murder, and it is quite fashionable in America—very fashionable—we have not yet thought it necessary to repeal the law against murder. Now, I do not believe that if the rule in its general application is a good one, that it should be abrogated in this case because some people violate it.

Professor Hansen: The Supreme Court is going to reverse your decision, though.

Professor Beach: I believe that if we should begin to make an exception of this kind to a good rule of nomenclature, the Society will meet with greater difficulty than it will escape, by trying to retain the commercial and common names which are used for certain varieties. For instance, in the case of the Hungarian prune on the Pacific Coast, that is the common name under which it is known on the market, and it is bought and sold by nurserymen under the name of Hungarian prune; and yet when we go East, we find that it is Pond's Seedling. We cannot follow the popular nomenclature, for the reason that popular nomenclature is one thing in one part of the country and another thing in another part of the country; and I for one am heartily in favor of holding to these rules which have been wrought out as I believe wisely and well, and let the people call it Duchess if they choose. Some of us know what is meant if they say "Oldenburg."

President Goodman: There is a motion before the house that this name be changed. The motion has been modified that that be referred to the standing committee. The motion is that the matter of changing the name of the Duchess be referred to the standing committee.

Professor Hansen: I would like an expression of sentiment. I have no personal feeling in the matter at all—not the slightest—but I just want to know whether the Supreme Court can reverse itself. I think it was a mistake in the first place.

Mr. Taylor: It seems to me that this matter ought to be re-investigated rather than voted upon after a short consideration, if it involves a change of long established practice on the part of the Society, as it appears to do. The Supreme Court sometimes reverses itself, but it does not go to the people for a vote before it reverses itself. It re-investigates a question and decides, and if this question needs re-investigation, it seems to me that the Committee on Nomenclature is the body to re-investigate it.

President Goodman: The motion of referring it to that committee

is before you. All in favor of referring this whole matter to the standing committee, signify by saying aye.

Motion carried.

REPORT OF GENERAL FRUIT COMMITTEE.

S. A. Beach, Chairman.

In presenting the report of the General Fruit Committee, permit me to call attention first to the fact that it includes reports of states and provinces which cover a vast range of territory. There is thus brought to our attention a summary of horticultural progress during the past biennial period in various portions of the region extending from Canada to the Gulf of Mexico and from the Atlantic to the Pacific.

A careful reading of these reports cannot fail to give the impression that more and more with the development of horticultural industries the emphasis is being shifted from the question of varieties to the question of handling, storing and marketing the fruit. One noticeable feature of these reports is the prominence which is given in many of them to the discussion of fruit growers' organizations. Speaking on this point, Chairman Hutt of Ontario, says:

"Co-operative Organizations—Probably one of the most marked evidences of the steady progress in the development of the fruit industry in Ontario during the past two years has been the rapid organization of co-operative associations for the handling and marketing of fruit. There is a Provincial organization which aids at the development of markets and establishing of a uniform method of packing and grading by the various local organizations. And already there are about fifty of these local organizations, most of which have been formed during the past two years. The results obtained by co-operative methods have given apple growers the assurance that by working unitedly they may realize nearly double the returns from their apple crop that they did under the old method of selling independently."

New York has as yet no organizations of growers for handling and marketing fruit products except among the grape growers of Chautauqua County, but the scarcity of competent labor is compelling the serious consideration of this question. In Pennsylvania the local organizations of fruit growers are doing excellent work in educating the people on questions of orchard management and of packing and marketing fruit. Chairman Butz states: "A marked advantage of such organizations is the co-operative feature, which enables shippers to obtain favorable rates for their products and through these organizations

crates and other fruit packages can be more advantageously purchased. Fertilizers, machinery, and spray materials can also be procured at special rates." Kansas reports one permanent organization for shipping fruit which Chairman Dixon remarks "is the best association we know of." A similar organization is in existence in western Iowa, being composed principally of growers of grapes and small fruits; it is now beginning to give more attention to orchard fruits. Chairman Burnette of Louisiana reports that "Louisiana oranges are now sorted and packed by the most modern methods, and are known to carry as well as oranges grown in any other section of the country." Chairman Fisher of Montana reports that the fruit growers of the Bitter Root Valley in the western part of the state organized a union last winter to take charge of all grading and packing. The manager is also to hunt markets and sell fruit for members of the union. A similar union has been formed in the Flathead district in Western Montana, and a union of strawberry growers has been formed in the Gallatin Valley. Chairman McDonald of Oregon reports: "Great strides have been made in this section of the country in the methods of grading and marketing of fruits. Throughout the whole Northwest field Hood River, Oregon, perhaps has attained a higher state of perfection along this line than any other section of the Pacific slope. Yet many other sections are fast awakening to the importance of organization and correct methods of handling and packing fruits.

"A great stimulus has been given the business on account of the interest taken in the organization of horticultural societies and competitive exhibitions. To illustrate, last year, 1906, Salem, Oregon, held a Cherry Fair under the auspices of the State Horticultural Society, at which handsome cups were given as premiums for fruits, in which commercial packing was emphasized. While only a few exhibitors had their fruit properly packed, another Cherry Fair was held again this year, and it was stated by good authorities that the packing was fully one hundred per cent better; and it was a noticeable part of the exhibit that it was the country people, and not the regular shippers of fruit, that made the most progress along this line."

Some of the reports call attention also to the growing nut industry. In various portions of California and Oregon extensive areas are already devoted to the culture of the Persian walnut, or as it is called, the English walnut. Hundreds of carloads of this nut are annually shipped from California and Oregon, and there are evidences that it may be successfully grown in portions of Idaho, Washington and British Columbia. Chairman McDonald of Oregon, speaking of the marked attention which walnut culture is receiving in the Pacific coast region

at this time, says, "This nut industry is being taken hold of in its very inception in a much more businesslike manner than is usually the case with new fruit planting. Discussion on the walnut industry is taking a wide range, and the best information obtainable in the world is being generously distributed to the prospective planters, with the result that the walnut planting is being made with great care, and proper varieties and strains are being selected for the best planting."

In portions of the southern states pecan culture is assuming commercial importance. Chairman Burnette of Louisiana reports that during the last biennial period more attention has been given to the planting of pecans than ever before, and many new orchards are being planned.

One feature of the reports from some eastern states to which attention may properly be called is the situation as regards the San Jose scale. This insect is certainly doing much to discourage the careless fruit grower, and it is giving impetus to the development of fruit culture in the East under up-to-date commercial methods.

In conclusion permit me to commend to your careful attention the excellent reports of the state chairmen. A copy of the circular letter which was sent to these chairmen, suggesting particular topics for their reports, together with their replies, are herewith submitted. [For letter and replies, see Second Part.]

Secretary Craig: I would like, without patting the chairman of the General Fruit Committee on the shoulder too much, to draw attention to the valuable character of the material which has been gathered together in these reports under Mr. Beach's direction. For the last four or five sessions this report of the General Fruit Committee has made one of the most valuable papers in our biennial report; I fear it is not consulted and studied as much as it ought to be. I would say in our work at Cornell with our students we find it a work of great value, as stating in accurate terms the condition of fruit growing in different parts of the country.

One other feature of value in this report which perhaps you members do not appreciate as much as you ought is the chapter on the history of fruit growing. We have for the last two sessions, beginning with the Boston session, where Mr. Taylor instituted the practice, attempted to sum up the history of fruit growing in a group of states, and present it in a concrete chapter. That has been done now for two reports, and we shall have in this report another chapter on fruit growing in the Gulf and Southern States. When these have all been gathered together, I trust that the Society will feel that it is financially able to put them together, and publish in one volume the History of Fruit

Growing in the United States, as set forth in these various reports. It will be a valuable contribution to the progress of horticulture in the United States, and a valuable commentary on the work of the American Pomological Society.

President Goodman announced as the Committee on Legislation with regard to grading and shipping of fruit: C. L. Watrous, Iowa; Wm. A. Taylor, Washington, D. C.; W. C. Barry, New York; C. H. Williamson, Illinois; and C. J. Monroe, Michigan.

REPORT OF COMMITTEE ON WILDER MEDALS.

Mr. Chairman, Ladies and Gentlemen: Your committee is pleased with the extensive exhibit of fruit displayed in connection with the meeting of this Society, and wishes to compliment those who are directly interested in bringing this fruit here. The different collections of seedlings of known parentage are most interesting and valuable, and special recognition is hereby given to the patient toil and effort of the several plant breeders.

Since there seemed to be in the minds of some of the exhibitors a hazy understanding of the conditions under which the Wilder medals are granted, it is necessary to make a clear statement of the instructions given to your committee, and the rules which it was required to observe, as follows: "Silver and bronze medals and honorable mention may be given for worthy new fruits, or for displays of fruit possessing educational or commercial value, and each exhibit must be judged upon its own merits; there can be no competition." Your committee has followed its instructions implicitly, and has used its prerogative to refer to the Ad Interim Committee such fruits and nuts as are not now in prime condition to be given their final rating.

To C. G. Patten of Charles City, Iowa, is awarded a silver medal. Mr. Patten's exhibit includes 60 apple seedlings of known parentage, four named varieties of apples, and three seedling plums.

The Central Experiment Farm of Ottawa, Canada, has an interesting exhibition of the intelligent results in the apple breeding work of that institution, and several varieties of Canadian origin. There are 26 Swazie seedlings, 14 of McMahon x Scott Winter, 15 hybrids of *Pyrus baccata* x *Pyrus malus*, and 14 of local origin, principally of the Fameuse group. For these a silver medal is awarded.

A silver medal is given to Ellwanger & Barry, Rochester, New York, for a most interesting and important display of 96 varieties of

apples, 111 varieties of pears, and 32 varieties of grapes. These varieties are all labeled, and add a valuable educational feature to the Society.

Mr. W. L. Detrick, Julian, San Diego County, California, has 21 varieties of apples well grown and carefully selected, and is awarded a bronze medal.

The Los Angeles Chamber of Commerce has an exhibit of very fine oranges, lemons, pomelos, pomegranates, grapes, plums, prunes, apples, pears, quinces and peaches. For this display a bronze medal is awarded.

The State of Virginia has a very large exhibit of apples, including many perfect specimens, but there are so many fruits defaced by codling moth and other agencies, that a bronze medal only could be awarded. Had the fruit been perfect it would have received a silver medal.

Another state exhibit, that of Maryland, is deficient in the same respect as that of Virginia, and is given honorable mention.

The Frederick County Fruit Growers' Association of Virginia is given honorable mention for a display of apples, and the criticisms mentioned above are applicable to this fruit also.

There is a small display of very good apples from Missouri, and as this fruit shows that it was selected with considerable care and is neatly arranged, it is given honorable mention. An unknown seedling in this display is referred to the Ad Interim Committee.

West Virginia is also given honorable mention for a fruit display, of which unfortunately only a small portion could be accommodated on the exhibit tables.

The Norfolk and Southern Railroad Company also receives honorable mention for an interesting display of figs, grapes of the Scuppernong class, pomegranates, wild cranberries and pears. In this display is the Brunswick fig, grown by George W. Arps, who receives honorable mention for this variety.

The hybrid seedlings of *Prunus Americana* x *Prunus Simoni* exhibited by Prof. Hansen are most interesting, as showing advancement in plant breeding.

The Southern Vineyard Company has an interesting display of the Scuppernong class of grapes.

The King grape, originated by William K. Munsen of Grand Rapids, Michigan, is given honorable mention.

The Rush Persian Walnut, originated by J. G. Rush, West Willow, Lancaster County, Pa., is considered promising as a hardy variety and is worthy of recognition by the Society; but since the present crop is

immature and the 1906 nuts are past their prime, it is referred to the Ad Interim Committee.

To this same committee is referred a seedling apple from Walter Whately, Crozet, Albermarle County, Virginia.

S. A. BEACH,

H. AUGUSTINE,

C. P. CLOSE,

Committee.

[For summary of awards, and list of Mr. Patten's apples, see Part II.]

Chairman of Committee: It seemed to the committee that it would be well to publish the rules under which the Wilder medals may be awarded on the program each year, so that there will be no misunderstanding whatever, and whenever a man puts in an application to exhibit under those rules he ought to know definitely what he is competing for,—under what conditions he may present his material.

On motion the report was adopted.

Mr. Close: I have a resolution to offer. It seems to your committee that the exhibit of Mr. Patten is worthy of the highest commendation of this Society, and deserves more substantial assistance than we can give. Therefore be it

RESOLVED, That we believe it to be a matter of public concern to the people of our colder regions, especially those of the upper Mississippi Valley, that this most promising work should not be permitted to languish through lack of strength of one man, but that it should be saved and extended by generous financial aid, either private or public, or both.

Mr. Augustine: As a member of that committee I wish to say that I have been at Mr. Patten's place, and know of the excellent work he is doing, and I take great pleasure in moving that the resolution be adopted.

Mr. Van Deman: Let me drop a word there. I am perfectly and heartily in accord with that, and in view of the intense interest that ought to be manifested in this great work of Mr. Patten's, I believe that if we were to take the matter up properly with the Carnegie Institute, that we could get, if necessary, a fund appropriated from that Institute to perpetuate and continue the work, just as has been done for Burbank.

President Goodman: I will appoint you a committee to take that right up. I would suggest that the Iowa State Horticultural Society has a child worthy being taken care of, and that they should take steps, if



A PARTY OF MEMBERS OF THE SOCIETY *en route* FROM THE HOTEL AT OCEAN VIEW TO THE EXPOSITION GROUNDS.

necessary, for the purpose of assisting Mr. Patten in keeping this work up.

Motion to adopt resolution submitted by Professor Close was then put to vote and carried.

President Goodman: Has the Ad Interim Committee a report?

Secretary Craig: The Ad Interim reports are sent in rather piecemeal to the Secretary, but they will all be compiled and included in the final report of the Society. I do not think the Ad Interim Committee at this time has a complete report to offer.

REPORT OF COMMITTEE ON CREDENTIALS.

Your Committee on Credentials have the following report to offer: We find that the following societies and organizations are officially represented by the delegates named after each:

Central Experimental Farm: Prof. W. T. Macoun, Ottawa, Can.

Canada Fruit Division: Hon. A. McNeill, Ottawa, Canada.

Ontario Fruit Growers' Association: Mr. R. B. Whyte, Ottawa, Canada.

Ontario Agricultural College: Prof. H. L. Hutt, Guelph, Canada.

Columbus Horticultural Society: Prof. William R. Lazenby, Columbus, Ohio.

Ohio State Horticultural Society: Mr. William Miller, Gypsum, Ohio; Prof. William R. Lazenby, Columbus, Ohio; Mr. R. J. Tussing, Canal Winchester, Ohio.

Illinois Horticultural Society: Capt. Henry Augustine, Normal, Illinois.

Massachusetts Horticultural Society: Mr. Wm. C. Strong, Waban, Massachusetts; Mr. J. K. Farquhar, Boston, Massachusetts.

West Virginia Horticultural Society: Mr. S. W. Moore, Elwell, West Virginia; Mr. John W. Stewart, Martinsburg, West Virginia.

Peninsula Horticultural Society: Mr. Charles Baker, Milford, Delaware; Mr. Frank E. Matthews, Pocomoke City, Maryland.

Pennsylvania State Horticultural Association: Hon. W. T. Creasy, Catawissa, Pennsylvania; Professor H. A. Surface, Harrisburg, Pennsylvania.

New Jersey State Horticultural Society: Mr. Geo. E. DeCamp, Roseland, New Jersey; Dr. J. B. Ward, Newark, New Jersey.

Vermont Horticultural Society: Prof. Wm. Stuart, Burlington, Vermont.

Michigan Grand River Valley Horticultural Society: Mr. W. K. Munson, Grand Rapids, Michigan.

South Dakota Horticultural Society: Prof. N. E. Hansen, Brookings, South Dakota.

The Alabama Polytechnic Institute: Prof. R. S. Mackintosh, Auburn, Alabama.

WILLIAM R. LAZENBY, Chairman Committee.

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

Your Committee on President's Address would strongly urge upon the Society, both as an organization and as individuals, the President's recommendations regarding uniformity of packages and grades in the marketing of fruits, and that effort be made to secure appropriate legislation, both state and national, to prevent the manufacture and use of deceptive and fraudulent fruit packages, and the fraudulent packing, repacking or branding of fruits in both domestic and foreign trade. In the judgment of your committee such legislation is essential to the continued normal development of the American fruit industry, and should cover at least the following points:

1. The branding of the package with the name of the variety contained and the name and address of the grower or packer of the fruit. The designation of the capacity of the package in terms in common use, such as number of fruits, weight of fruit, or capacity in quarts, bushels, etc. The requirement that whether the contents be graded or ungraded they shall be of uniform quality throughout the package.

2. Your committee would also urge upon the Society and its members the importance of continuing the work of breeding fruits adapted to the particular and varied needs of the diverse climatic regions of the United States and the Dominion of Canada, and the necessity of maintaining both in technical and commercial usage of an accurate and simple nomenclature of both old and new varieties of fruits along the lines already formulated and applied by this Society, including the careful preliminary testing of new varieties to determine their distinctness and probable value before they are commercially introduced.

Respectfully submitted,

WM. A. TAYLOR,

S. A. BEACH,

W. R. LAZENBY.

Mr. Munson: What I desire to say may seem something like a complaint against this Society. If you will go out into the country abroad over the United States, in nearly all sections, and ask the people

what they know about the information given to them by the American Pomological Society, you will find they know nothing of it more than they see announced occasionally in the newspapers, that the American Pomological Society held a meeting and elected certain persons as officers. That is about the amount of their information. Now, there are several things that have been mentioned here that have caused me to make these remarks with reference to this committee work. The people abroad have this idea generally, that the American Pomological Society is composed of a few dozen persons who every two years come together as a mutual admiration society. The information that we desire to see brought together and put into shape and sent abroad to the country to educate the people, does not reach them. It is the practical idea of reaching the people that I wish to bring before you. Now, how can we get this valuable matter that we have in our reports into the hands of the people that should be reached? A few thousand copies of the reports are published, and they go to so many persons. Take this subject of nomenclature: hundreds of thousands of catalogues are sent broadcast over the country into the hands of the citizens who are going to plant orchards, and they take their nomenclature from those catalogues. I recently ran down a grape—just as an example—a few years ago. It was exhibited at the Exposition in Chicago as the Columbian grape, and shortly afterward it was being sold in Texas as the “Columbian Imperial” grape, at \$5.00 per vine. Nobody in all that region knows anything more about that grape than that it is the “Columbian Imperial” grape. But what is the true name of the grape? It is the old Union. That is one of the many examples that might be cited in reference to fruit, and the people are educated upon its nomenclature by the catalogues more largely than through any other source. Even our most widely circulated horticultural books, and the Government Catalogue of Fruits; reach but few people in comparison. Now, how can we overcome that difficulty and get in touch with the people? By establishing another committee, some committee that can co-operate or correspond, a committee of correspondence with fruit growers' associations of the country? Or shall we seek to get delegates appointed from those organizations as far as possible throughout the country, that we may get in touch with them and convey our literature to them through their delegates? We could then be presented to the members, and they would learn the names established by the Society, the suggestions that should be adopted throughout the country, and all those other matters that we wish to convey to the people; and we should cease to be subject to their charge of conducting a mutual admiration society once every two years. The Society truly is doing a great work, but this work is a

dead letter when it comes to apply to the mass of the fruit growers of our country, for they never even look into the Pomological Society's Report to ascertain what is the correct thing, or whether the fruits they have are properly named.

I merely throw out these ideas as suggestions, hoping that some movement may be made by the Society by which we may come in touch with the people.

Professor Mackintosh: I wish to offer the following motion,—That the report of the Committee on the National Council of Horticulture be taken from the table, received, and the matter referred to the Executive Committee with power to act.

Motion seconded.

President Goodman: I believe I stated last night that virtually that resolution took the place of a motion to lay upon the table,—it meant that in result; but it is not that in matter of form, and this resolution will have to be changed to call for a reconsideration of the vote by which it was received and not accepted. That would be the only way to get it up. The matter is not virtually laid on the table, although I made that remark.

Professor McIntosh: I move that we reconsider the motion of last evening.

Motion seconded.

Colonel Brackett: Owing to the lateness of the hour, I think it would be very inopportune to bring up that question again this morning, as we now have but a few moments more to spare, and I would certainly be opposed to bringing up that motion again at this time. I think it was the understanding that that matter was to be laid over for further consideration, and I think it was the intention of the report of the committee to have that matter under advisement and consideration for the future.

Professor Mackintosh: The reason we wish to bring this matter up is in answer to Mr. Munson's talk a minute ago in regard to how the work of the American Pomological Society can be presented to the people of the country. We publish 800 reports, and how many people of the country know anything about the work? This Council of Horticulture has been organized, (I do not care how it was started) and the men who now compose the board, it seems to me, are worthy of some consideration. Some of the articles that they have sent out to 5,000,000 subscribers of papers in the country, it seems to me, should supply the American Pomological Society with plenty of opportunity to get in touch with the people. On the little subject of Hemlocks, probably a million papers were sent out, and such matters as that have been brought

to the attention of the American people—the people who do not attend our horticultural organizations—and I do not see why we cannot consider this matter and receive it as we should. At the Kansas City meeting this question was presented and the committee was appointed, and has reported; and it seems to me it would be in order to have a reconsideration of this matter, so that we can make this American Society of more use to the whole country.

Secretary Craig: There is no reason why the American Pomological Society should not have its own Bureau of Publicity, if such is the desire. I think Mr. Munson's suggestion is an excellent one, but if the Bureau of Publicity is desired, the American Pomological Society is the organization to run it.

Cries of "That is right."

President Goodman: The motion is to reconsider the motion by which the report of that committee was received but not accepted. All those in favor of reconsidering that vote, signify by saying aye. The noes have it, unless a division is called for. The motion is lost.

HORTICULTURE IN OHIO.

Professor William R. Lazenby.

Fortunate in geographical position, blessed with a naturally fertile soil and a good topography, with a varied and productive climate, it is not surprising that Ohio ranks high in natural resources and in the diversity and extent of her industries. In the semblance of a square, about 200 miles on a side, between parallels 38° and 42° north latitude, having the great lakes on the north and the Ohio River on the south, the high way of nearly all the great railroad systems in the country, her facilities for transportation are excellent, and the great commercial centres and markets of the nation are near at hand. Ohio is equally fortunate in the distribution of her population. With five cities of over 150,000 each, and over 40 cities with populations above 10,000, a large majority of her people live in rural districts. It is a state of small farms; according to the census of 1900 there were 276,719 farms in Ohio, the average size of which was 88½ acres. Only 164 farms contain 1,000 acres or over. Judged by her mineral and timber resources Ohio ranks among the richest of the Union, and her manufactures and commerce are varied and extensive. Yet the foundation of Ohio's prosperity is her agriculture and horticulture. Other industries are useful and necessary, and many pursue them with advantage to themselves and others. But many of those industries are less permanent in character, and some of

them may yet be entirely dispensed with, while agriculture and horticulture never can be. They are the first and most essential of human pursuits, and it is to every one's interest that they should be honored and prosperous. Happy is that state or community where they are pursued with satisfaction and profit.

Ohio is noted for her diversified rather than specialized horticultural industries. Some states raise more apples and pears, others more peaches and plums, and still others more market garden vegetables, but few states rank higher in the production of all the standard horticultural crops grown in the north temperate zones. The statistics of the twelfth census show that for the year 1899 the total value of all crops in Ohio was \$151,226,461. Of this amount the crops usually classed as horticultural contributed something over 19 per cent, or \$28,827,869. Of this amount nearly one-half came from vegetables, and one-third from fruits. One striking feature of the horticulture of certain states, notably California, is its segregation or specialization. This together with the fact that the horticultural interests of these states are not overshadowed by the agricultural, makes them characteristically horticultural states. For fruit production alone California now holds an undisputed claim to first rank, but when we include all the divisions of horticulture, certain states of the East and great Middle West outdistance California. In small fruit culture, market gardening or trucking, vegetable growing under glass, floriculture, the nursery business, and seed growing, Ohio takes a high rank. While there are few single areas of great extent devoted to anyone of these lines of horticulture, the aggregate of small holdings and the total yield therefrom make an excellent showing. Magnitude has for many a peculiar fascination. The owner of 5 acres of orchard often has ravishing dreams of the joy and satisfaction inherent in a great western fruit farm with its hundreds of acres of fruit trees. As the young captain who can scarcely manage his company in battle would like to command a great army, so many a man with little or no experience in horticulture thinks he can manage a great orchard. I would not, if I could, disparage great enterprises. There is such a thing as raising fruit on a large scale, and it is good business for those who are qualified for it and have all the means it requires. It is attractive and inspiring to see horticulture successfully practiced on a large area. Of this small-farm horticulture Ohio affords a good illustration, and it is not likely that large horticultural operations whether by individuals or corporations will ever absorb, or enable us to dispense with, the smaller ones.

Ohio ranks well to the front as an apple producing state. The U. S. census of 1890 gave her first place, with a crop of over 13¾ million

bushels for the year 1889, and the census of 1900 gave her third place with a crop of over 20½ million bushels for 1899. From the data at my command a conservative estimate of the apple production of Ohio for the ten years from 1895 to 1905 is 120 million bushels, or an average of 12 million bushels a year. Only once (1898) during this decade did the yield fall below 5 million bushels, while for three times (1895, 1896, 1899) it reached the high mark of over 20 million bushels. The U. S. Census reports for the years 1890 and 1900 give the following data regarding the number of bearing apple trees and yield of apples.

For 1890	Number of bearing trees	Bushels of apples
Whole United States.....	120,152,795	145,105,689
Ohio	10,860,618	13,789,278
Michigan	8,582,386	13,154,626
Kentucky	5,730,144	10,679,389
Illinois	6,949,336	9,600,785
Indiana	6,089,106	8,784,038
Missouri	8,150,442	8,698,170
New York.....	14,428,381	8,495,846
Virginia	4,258,364	8,391,425
Pennsylvania	9,097,700	7,552,710
West Virginia.....	2,870,535	4,439,978
For 1900		
Whole United States.....	201,794,764	175,397,626
New York.....	15,054,832	24,111,257
Pennsylvania	11,774,211	24,060,651
Ohio	12,952,625	20,617,480
Virginia	8,100,025	9,835,982
Illinois	13,430,006	9,178,150
Michigan	10,927,899	8,931,569
Indiana	8,624,593	8,620,278
West Virginia	5,441,112	7,495,745
Missouri	20,040,399	6,496,436
Kentucky	8,757,238	6,053,717

In spite of the large annual average production there are comparatively few large or well known apple orchards in Ohio. The following table will give a fairly comprehensive idea of their number and size.

COMMERCIAL APPLE ORCHARDS IN OHIO.

10 acres.....	50
10 to 20 acres.....	34
20 to 40 "	25
40 to 50 "	17
50 to 75 "	9
75 to 100 "	4
100 to 150 "	2
Over 150 "	1

This shows that there are about 142 apple orchards in Ohio of from about 10 to 150 acres, and that the average size is not far from 30 acres. A conservative estimate of the number of apple orchards containing five acres or upwards is 225. These 225 orchards will probably average 20 acres each, and this gives us only 5,500 acres of apples. As a maximum yield is at least 20,000,000 bushels, it shows at a glance that much of this great aggregate comes from the still smaller plantings of the farmer, gardener, and suburbanite.

One of the most characteristic single features of the rural life of Ohio—and the same is true of many other states of the East and Central West—are the fruit trees which so generally diversify every small as well as larger farm throughout the state, and are also met with on the town lots of the mechanics and workmen in every village, and in the suburbs and outskirts of every city. The average Ohio homestead with its apple orchard and its clusters of pear, cherry, and plum trees, not to mention its grape vines, surrounding the house and dotting or belting the garden, give an air of comfort and hospitality rarely seen elsewhere, and nowhere else seen fairly equalled. I believe that our country north of the Potomac and Ohio Rivers is better supplied with wholesome, palatable tree fruits than any other portion of the earth's surface of equal or nearly equal area. In value of orchard products, Ohio, according to the U. S. Census, held third rank in 1850, second in 1860, second in 1870, third in 1880, and fourth in 1900. 1890 is omitted, for the value of orchard products is not given in the census report of that year. New York held first rank in 1850, 1860, 1870, and 1880; and second rank in 1900. Pennsylvania held second rank in 1850, third in 1860, second in 1880, third in 1870, and third in 1900; Michigan, sixth rank in 1850 and 1860, fifth in 1870 and 1880, and sixth in 1900; California, twenty-seventh rank in 1850, tenth in 1860, eighth in 1870, seventh in 1880, and first in 1900. California is likely to keep her position for several years, but I look to see her superseded by some of the great apple producing

states of the Middle West in the not distant future. The aggregate fruit crop of the five states, California, New York, Pennsylvania, Ohio and Michigan, was 52.3 per cent of the total crop of the country for 1899.

Next to the apple the peach is the most valuable orchard fruit in Ohio, but the conditions of successful peach culture are not wholly favorable, except along the shore of Lake Erie and the adjacent islands. In some of the southern and southeastern counties of the state large areas of peaches have been planted, but the crop is precarious and many growers are discouraged. Some years the crop aggregates about 3,000,000 bushels, but it usually falls short of this. It can be laid down as a general proposition that the finer peaches, plums, cherries and grapes are grown with difficulty north of the 40th degree of latitude, except in a few specially favored localities, whereof the southern shore of Lake Erie is the most noted, though the west coast of Lake Michigan and a part of the southern shore of Lake Ontario are likewise famous. It is possible to grow peaches, plums, and cherries, not to mention grapes, outside of the climate most congenial to them, but it is a work wherein one is likely to pay dearly for his success, and often to have his hopes utterly disappointed.

There are few large orchards of pear, plum, or cherry in Ohio, although now and then one of commercial importance is met with. One cherry orchard of 75 acres, and others of less size, have been planted in Sandusky County, and this is perhaps the most important cherry area in the state. The marked increase in pear culture during the past fifteen years by the general introduction of the Keiffer is mainly in the southern counties, although a few of the northern counties have increased their area to a marked degree.

The grape occupies a large place in Buckeye pomology. In the production of native grapes Ohio ranks next to New York; but the industry is mainly confined to the grape belt of the southern shore of Lake Erie. The five counties of Cuyahoga, Erie, Lake, Ottawa and Lorain produce four-fifths of all the grapes grown in the state, and this is due to the amelioration of the local climate by Lake Erie. The greater portion of the grapes grown are made into wine, which sometimes amounts to 2,00,000 gallons a year. Sixty million pounds of grapes represent a full crop, while the maximum yield has been 80,000,000 pounds.

The small fruit interests of Ohio are large, but there are few reliable statistics. Strawberries undoubtedly lead both in area and yield; then follow blackberries, black raspberries, red raspberries, currants and gooseberries, in the order named. Some years ago strawberry culture attained a large acreage in Belmont County in the eastern part

of the state, and the berries were largely shipped to Pittsburgh and Chicago. Black raspberries were also grown largely in various sections of the Miami Valley, but these areas have declined, and the shipping trade in the small fruit has fallen off. The total acreage of small plantations for home market has increased, and the aggregate production in the state is larger than ever before.

Following the subject of the fruits proper, it will not be out of place to briefly mention the nursery interest of Ohio. The State Nursery and Orchards Inspector reported for the year 1905 a total of 481 nurseries. In keeping with the general character of the horticulture of the state, this business is done by a large number of men working on small areas. For example, counting not all the land owned or rented by nurserymen, but the area of actual stock, it is found that of nurseries:

From	5 acres to	10 acres	there are	186
"	10 "	15 "	" " "	87
"	15 "	25 "	" " "	52
"	25 "	50 "	" " "	15
"	50 "	75 "	" " "	10
"	75 "	100 "	" " "	8
"	100 "	200 "	" " "	3
"	200 "	500 "	" " "	2
Over	500			1

Market gardening and truck farming are largely practiced to meet local demands, and certain special garden crops are more or less centralized and grown for export. Radishes, early tomatoes and cucumbers are grown in the southern counties of the state for northern markets, and large plantations of celery and onions are grown in some of the north central counties. Numerous muck swamps and the beds of former shallow lakes have been reclaimed and adapted to these and a few other crops. In one county (Ross) where soil and climate seem favorable, the growing of onion sets has become a well specialized industry.

The winter forcing of vegetables is becoming a general practice in nearly all the cities of the state, and has assumed unusual proportions near Cleveland, Toledo and Ashtabula, where single growers have from 5 to 10 or more acres under glass. Lettuce is the leading greenhouse crop, but radishes, tomatoes, cucumbers, mushrooms, and a few other crops are often grown.

Floriculture is practiced in all parts of the state, and many large establishments for the growing of cut flowers and others for bedding plants and ornamental varieties generally are found. Some of the best

known centres of floriculture are Cleveland, Springfield, Dayton, Columbus and Painesville.

In this epitome of the fruit interest of Ohio, I shall not fail to mention the varieties most largely planted for market. From the best data at hand I may say that the following varieties of apples take the lead by number of trees planted: Rome Beauty, Ben Davis, Baldwin and Grimes Golden. Other varieties very generally planted, contributing a large part to the more recently planted commercial orchards, are Smith Cider, Yellow Transparent, York Imperial, Hubbardston, Red Astrachan and Mauve. Many other varieties are being planted in special localities, and for special purposes like home use, but these seem to have the call for the whole state for commercial planting at this time. For fillers, or for coming into early bearing, the Wealthy, Duchess, Jonathan, Strawberry and Maiden Blush are very generally used.

Of the other more important fruits the following are among the most largely planted varieties of each for commercial purposes:

Pears—Kieffer, Bartlett, Duchess.

Plums—Red June, Burbank, Abundance.

Plums (European)—Lombard, Damson, German Prune.

Peaches—Elberta, Mt. Rose.

Grapes—Concord, Worden, Catawba, Delomac, Niagara.

In Ohio as well as elsewhere, whenever you urge the superior advantages of fruit growing as a vocation you are met by the objection that fruit culture does not pay. If this is true, it is a serious and valid objection; but is it true?

I think we will all admit that poor crops, whether from field or orchard, do not pay; that shiftless indifferent work in horticulture does not pay; that it is sometimes slow work to make decided headway in the face of blights and insects, frosts and drouths, though one has done his best to achieve, and really deserves, success. Yet I insist, as a general proposition, speaking for Ohio at least, that *good fruit culture does pay*; that few vocations afford as good a prospect or as full an assurance of reward for intelligent, painstaking, persistent labor as this does. The general fundamental facts or principles on which I base this assertion are these:

First. It is rarely impracticable to grow good crops of fruit if you have made a wise selection of varieties, and are willing to work for them. The time and means squandered in trying to raise fruit, where only half-crops or quarter-crops or no crops can be made, is the heaviest item on the wrong side of a fruit grower's balance sheet.

Second. The second truth is this; good fruit crops, good in quality as well as in quantity, rarely fail to yield a profit to the grower. There

are exceptions, but they have been few in the past, and will be more infrequent in the future. The growing demands for good fruit and our rapidly improving transportation facilities make this certain.

Third. The fairest single test of good fruit culture is a steadily increasing yield. This increase may not be uniform from year to year, for there are risks in fruit culture as well as in other pursuits; yet there is no other index of fruit culture so unerring as the general increase or decrease of its aggregate product for a short cycle of years. That orchard or fruit farm that averaged 30 per cent of a full crop fifteen years ago, 50 per cent of a full crop ten years ago, and will measure up an average of 75 per cent for the past five years, has been in good hands. The adaptation and selection of varieties have been judiciously made, the productiveness of the soil sustained, and the care and management wisely bestowed. This is what I mean by good fruit culture.

In conclusion I should not fail to mention various organizations that have been signally useful in promoting the horticultural interests of Ohio. The State University, the Experiment Station, the State Board of Agriculture, the state and numerous local horticultural societies, have all contributed in various ways to the advancement of the art and science of horticulture. The local horticultural societies, with their frequent meetings, have accomplished much in developing the faculty of observation and comparison, and in cultivating the social amenities of rural life. One of these local societies was organized over 62 years ago, and while it may have lost something of the elasticity and enthusiasm of youth, it is still healthy and vigorous. Another 40 years of age can justly boast of having never missed a monthly meeting during its existence. Such records are stimulating and inspiring, and the locality that is making them can scarcely fail to have a wide-awake and progressive horticulture.

HISTORY AND DEVELOPMENT OF THE COMMERCIAL ORCHARD INDUSTRY IN VIRGINIA.

Professor J. L. Phillips, Blacksburg, Va.

Early visitors to this hemisphere were greatly attracted by the abundance and quality of the native fruits, and the literature of their time is replete with references to the great abundance of wild grapes, almost all the American types being represented. The vines often attained a diameter of 6 to 8 inches (some of the Scuppernong vines now reach 12 to 18 inches), and reached to the tops of the tallest trees. When not too heavily shaded by the dense forests, these vines bore an

abundance of fruit, which was used by the settlers mainly for making wine. Frequent mention is also made of wild raspberries and strawberries. These as well as grapes are abundant in parts of Virginia to this day; they are indeed so abundant and so satisfactory for home use that in the country the growing of improved varieties in the gardens is often abandoned for the native supply. In fact practically all the fruits were represented in the wild state in great profusion, hence no one wonders at the expression used by Capt. John Smith, "Heaven and earth never agreed better to frame a place for man's habitation." However, the lack of markets, and to quite a late date, transportation facilities, prevented any commercial development. Then too the demand in those early days was almost exclusively for tobacco.

Most of the planters grew a great variety of fruits for home use. Governor Berkeley had in 1640-50 an orchard of 1500 apple and other fruit trees; and in 1648 one orchard in New Albion (Northern Virginia) contained 10,000 trees. The orchards of Col. Wm. Fitzhugh contained in 1686, 2,500 apple trees. These were not commercial orchards in the sense we now use that term. The fruit was used mainly for home consumption and the making of cider and brandy; and a large quantity was also fed to stock. Apples were grafted to some extent upon the indigenous crab stocks, though the usual method was to grow trees from seed, which were either saved from the best fruit or else imported from Europe. Some of the trees grown in this way turned out to be valuable varieties.

ORGANIZATIONS.

These conditions remained very much the same during the 18th century. Early in the 19th century, however, there was an organized effort to better agricultural conditions. Among the various associations formed, I shall only mention the Columbian Agricultural Society, which was organized in 1809 by people interested in agriculture in Virginia, the District of Columbia, and Maryland. In 1815 the Agricultural Society of Virginia had a membership of 230, representing almost every section of the state. The Albemarle Agricultural Society was organized prior to 1820 by James Madison, Thomas Mann Randolph and others.

The Virginia Agricultural and Mechanical Society was conducting successful exhibits in 1853 to 1854, the American Agriculturist referring to the exhibit in its October number, 1854, as "one of the best of the season." The Norfolk Horticultural and Pomological Society was organized in 1867 with G. F. B. Leighton as president. During the past two years, there has been a distinct tendency toward organizations of a local nature, and these local bodies, organized as they have been for

mutual help and advantage, will of necessity come to wield the same power as do similar bodies in Oregon and other states.

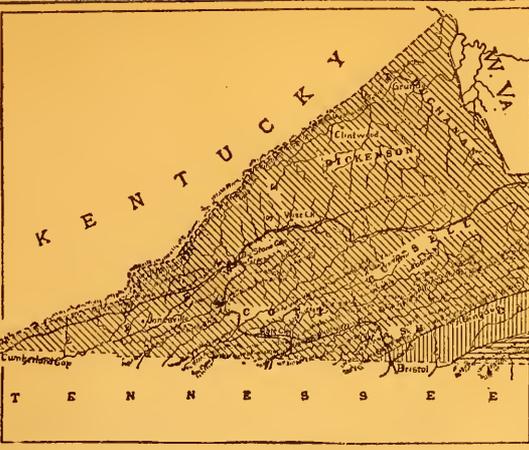
SOILS.

The sections of Tidewater and Middle Virginia occupy together the area extending from the sea up to a point on the Potomac about 30 miles above Washington at the north, thence in a southwesterly direction to a point about 20 miles west of Danville, on the North Carolina line. The two sections together comprise a little over half of the state. The soil is rather thin over most of this territory but takes improvement readily and when brought to a high state of cultivation, is well suited to the growth of strawberries and other small fruits. The tree fruits have not attained to any commercial prominence in this section, for the late frosts are likely to harm the fruit by destroying it in the bloom. The small section southeast of Norfolk is a marked exception to this rule, being almost free from injurious frosts. This little section took six out of nineteen Wilder medals awarded in 1877 at the Baltimore meeting of the Society (See page 33 of Proceedings). The high price received for truck crops in the favored spot has prevented its pomological development on a large commercial basis. This year of scarcity, however, some of the growers with several thousand peach and pear trees have heavy crops. The exhibit of fruits in season by the Norfolk and Southern Railway at this meeting consisting of wild cranberries, also figs, pomegranates, grapes, etc., shows the fruitfulness of this locality.

Passing to the westward, we come to the more elevated parts of the state comprised in the Piedmont, Blue Ridge, Valley and Appalachia sections, 20,000 square miles in extent and covering almost half of its area, a large proportion of which is well suited to the growth of the tree fruits. The Piedmont and Valley sections have attained the greatest prominence, but the more elevated portions of the Blue Ridge section in the southwestern part of the state, comprised largely by Floyd, Carroll, and Grayson Counties, Alleghany County in Appalachia, etc., are now being largely planted to fruit with every indication of success. The Piedmont section came into prominence first, for in this section is located the soil in which the Albemarle Pippin comes to the highest state of perfection. The areas suited to this apple are not large, however, being restricted mainly to the mountain coves on the eastern slope of the Blue Ridge. There are small isolated areas outside of this section that also produce good Pippins, mainly in Loudoun, Frederick and Roanoke Counties. This section has an elevation of from 500 to 1,000 feet, with a number of mountains that attain an elevation of 3,000 and 4,000 feet. Not all of the soil in this or any other section of the state is well suited

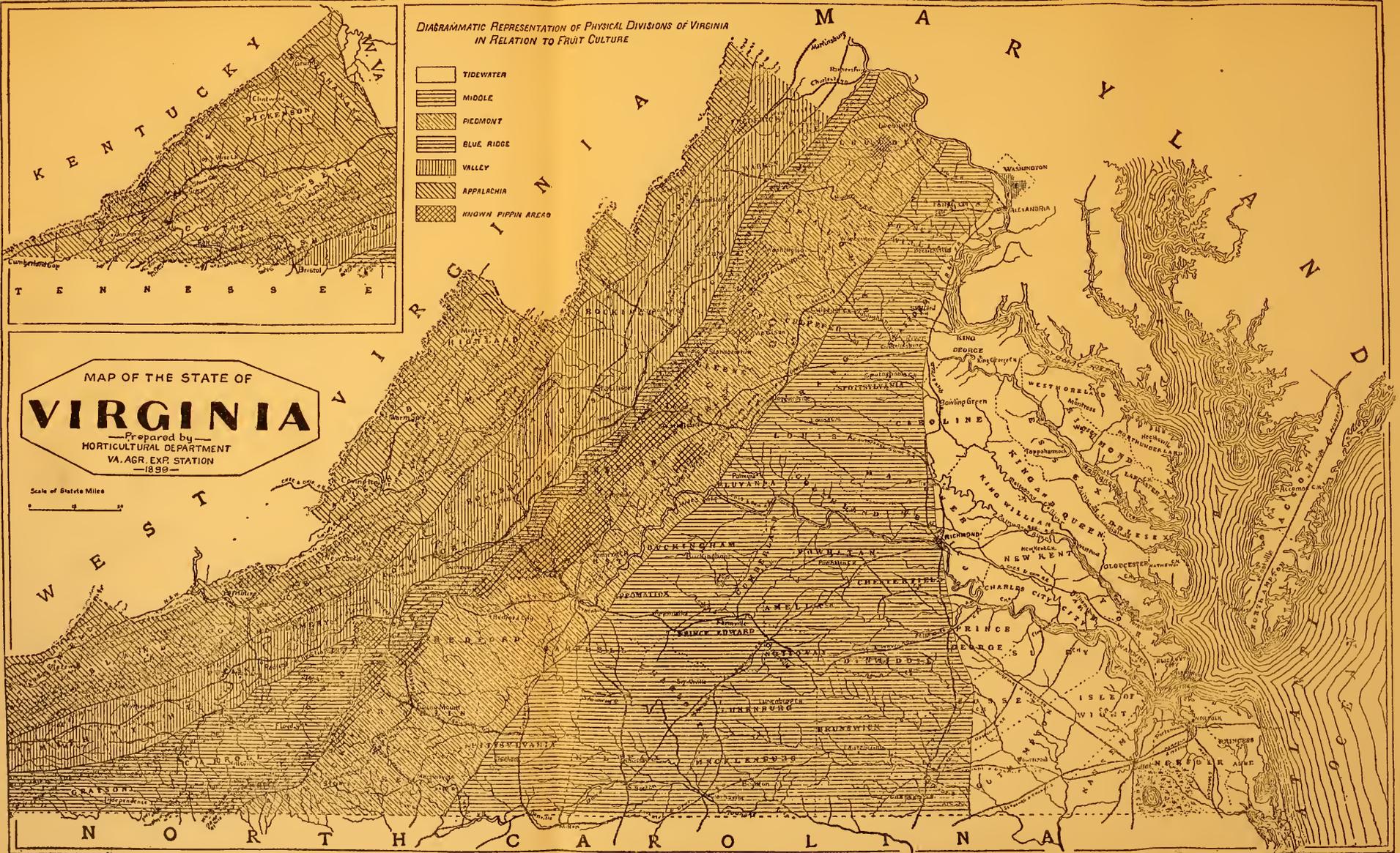
DIAGRAMMATIC REPRESENTATION OF PHYSICAL DIVISIONS OF VIRGINIA
IN RELATION TO FRUIT CULTURE

-  TIDEWATER
-  MIDDLE
-  PIEDMONT
-  BLUE RIDGE
-  VALLEY
-  APPALACHIA
-  KNOWN PIPPIN AREA



MAP OF THE STATE OF
VIRGINIA
—Prepared by—
HORTICULTURAL DEPARTMENT
VA. AGR. EXP. STATION
—1899—

Scale of Statute Miles
0 5 10



VIRGINIA

to orcharding. It is best to avoid the low lying lands, which are more subject to frosts and the attacks of fungous diseases. The best orchard soils in the Piedmont section are of rich dark-brown or chocolate color. While the more sandy flint and quartz formations are not so desirable for apple growing, if properly situated and properly handled they serve quite well for peaches, pears and small fruits. The stiff red clays of this section and the poor, whitish clays must be avoided.

It is well nigh an endless task to discuss the fruit soils of this state, they are so various and diversified. I wish to add, however, that the Valley section, extending from the Potomac at the north to Bristol in the southwest, ranging in elevation from 500 feet to 2,500 feet, is one of the best for producing fine red apples. Avoid those soils underlaid with shale strata, selecting the deep, rich lands with considerable elevation above the water courses. The very best soils in this section for fruits are those formed by an outcrop of sandstone, which intermingles with the limestone.

TRANSPORTATION.

Orchard planting in this state is really just beginning its development, and much of the very best undeveloped land is yet located within two to five miles of good shipping points, and can be purchased at reasonable prices; though of course when persons wish to locate in the well known orchard districts of Albemarle, Augusta, Frederick and Roanoke Counties, they must be ready to pay good prices. The state is well supplied with railroads, there being two lines, which extend almost the full length of the Valley, connected with the eastern part of the state by the C. & O., N. & W., three branch lines of the Southern, etc. The main line of the Southern extends through the Piedmont area.

Some of the very best orchard lands and even of the very best commercial orchards of the state today are situated 20 to 25 miles from shipping points, and with proper railroad facilities the land suitable for orchard purposes can be almost doubled.

NURSERIES.

The orchard industry in the state is naturally quite dependent upon the nursery industry, which prior to 1850 was either lacking or confined almost entirely to local nurseries. Thomas Jefferson had some stock grown in 1773; a Mr. Rawles of Albermarle County conducted a nursery about 1790; and later a Mr. Dollins in the same county. These and other desultory plantings, combined with the growing by the planters

themselves of seedling apples, which were top worked in the orchard, constituted the nursery business in the state. Peaches were largely grown from seed until quite a late date. Reliable statistics and historic facts of interest are difficult to obtain at the present time. John Adlum of Georgetown conducted a small nursery, devoted mainly to the grape, early in the 19th century. Josiah Pierce of Rock Creek, Maryland, also furnished nursery stock to Virginia planters prior to 1850.

All these have long since passed away, and the first commercial nursery that I have been able to trace is that of Franklin Davis, who came from Bedford County, Pennsylvania, and established himself in Rockbridge County in 1850. Within a few years, he moved to the adjoining county of Augusta, where his trade and property were destroyed by the Civil War. After this Mr. Davis moved to Richmond and began his business on a very much larger scale, growing in the first few years about 600,000 trees annually. This was one of the notable nurseries in the East. It is at present owned and operated by W. T. Hood & Co. of Richmond, the Messrs. Davis having moved to Baltimore.

The Munson Hill Nursery of Falls Church was established in 1852, the proprietor, Mr. D. O. Munson, being, at present, the oldest nurseryman operating in the state. This nursery is now confined largely to ornamentals. Mr. Munson moved to Virginia from New York in 1851, and began his nursery by growing a few peach trees for his own orchard.

Other nurseries of less note were established from time to time, the number increasing gradually until about 1890. A. F. Mosby established a nursery near Staunton about 1858, afterwards removing to Richmond, where he conducted quite an extensive business. No doubt Mr. Mosby is largely responsible for the wide dissemination of the York Imperial apple, which is at present possibly the leading variety in point of numbers and financial returns in the state. The industry did not reach the commercial stage till about 1865 or 1870, when the high prices received for fruit and the resulting demand for nursery stock helped to stimulate others to enter the business, so that by 1900 there were planted in nursery stock about 5,000 acres, valued at something like \$338,000.

In 1893 the San Jose scale was discovered in the East at Charlottesville, though not until it had gained quite a foothold in different sections of the state. The prevalence of this insect led to the enactment of the Crop Pest Law in 1896, which marked the crucial point in the development of the industry in the state. The men in charge of this work had a double, and, in some sense, a conflicting duty to perform, for they were to arouse the growers to the danger confronting them, and at the same

time prevent as far as possible any wild panic which would unsettle conditions and stop the development of the industry. This work was wisely done under the direction of Professor Wm. B. Alwood, and the industry continued to develop instead of being ruined by this trouble.

With the inspection work for San Jose scale in the nursery, came a knowledge of other insect pests and plant diseases that were almost as bad from the nurseryman's standpoint, namely, crown gall and woolly aphid. The large increase in amount of nursery stock grown of course brought reduction in prices, and this, combined with the increased loss from insects and diseases, induced many of the smaller nurserymen to abandon the business. At the present time there are 36 nurseries registered in the state. The quantity of nursery stock grown has increased largely, however, and some new nurseries, notably in Southwest Virginia, are developing a splendid business.

STRAWBERRIES.

The first work in growing strawberries on a commercial scale was done near Norfolk about 1846. The earliest berries then sold on the local market at \$1.00 to \$2.50 per quart, though the price soon declined to 25 and 50 cents. The industry attained considerable prominence here prior to 1860, and was renewed with increased vigor very soon after the close of the war, though it took 10 years to master conditions and put the business on its feet.

The Virginia Scarlet (locally called Peabody), Burr's Seedling, Jenny Lind and Hovey's Seedling, about comprise the list of varieties up to 1860. These were soon followed by the Wilson Albany, which held the field longer than any other variety, and is still grown largely.

This section did not become enthusiastic over the business until about 1870, when Mr. J. R. Young, Jr., of Newburg, N. Y., became acquainted with the location for market gardening and launched the most stupendous gardening enterprise known at that day or this. His first venture comprised one hundred acres, and each succeeding year saw an increase of one or two hundred acres until 1878, when he fruited over three hundred acres grown in double row beds, fifteen and twenty inches apart, and had over two hundred and fifty acres of young, spring set plants, making nearly six hundred acres, which were kept in the most perfect condition. Sharpless was his main variety. Imagine more than 1,200 hands picking berries on one farm every day for a month and making \$2.00 to \$3.00 per day each, and shipments of 75,000 to 100,000 quarts per day. The crop in 1900 was about 4,000,000 quarts in this section, and this year fell a little short of 10,000,000 quarts. The price this year ranged between 7 and 15 cents per quart, although thousands

of crates sold for from 20 to 25 cents. The lands used for this purpose are worth from \$300 to \$1,000 per acre.

Raspberries and other small fruits have not yet been grown on a commercial scale, though in sufficient number to supply our home cities. Mr. R. W. Birch of Fairfax County, states that the average crop for his section is about 4,000 quarts per acre, the gross sales from which amount to from \$350 to \$400.

PEARS.

The first pear orchard for commercial purposes was planted by Lieutenant Weir, and consisted of 4,535 Duchess trees, mostly dwarf. The pear as a commercial fruit is coming to the front in some counties, though the price usually obtained for the Keiffer pear, which represents the bulk of the crop, is rather low, the large yield alone making the crop a profitable one. The number of pear trees has increased from 122,000 in 1890 to 291,000 in 1900. The increase for this period is more than 100 per cent, but the increase since that date is much greater. Augusta County with 8,000 trees in 1900, now has more than 27,000; and Frederick with 10,000 trees in 1900, now has more than 35,000, an increase of about 250 per cent; while Rockbridge and Rockingham each have 18,000 compared to 4,000 and 6,000 respectively in 1900.

GRAPES.

Though grape growing and wine making were indulged in by the early colonists, we have no records of any real success until early in the 19th century, when the growers began to devote their attention more generally to the native grapes. Jefferson as late as 1790 was attempting to grow the European varieties, but they were finally discarded here as in other parts of the country. Messrs. Lockhart, R. Weir, Noel, J. Browne, and J. Duling are mentioned by Rafinesque as among the early growers of the grape. The soil of Virginia and the adjoining territory is largely responsible for the origin of some of the fine early varieties of our native grapes, which helped very much in establishing this industry in America. The Catawba, the first really good American grape, was picked up in the mountains near Ashland, North Carolina. It marked an important epoch in American grape growing and helped to draw attention to the native vine, which alone appears to be suited to our soil and climatic conditions. Norton's Virginia, found near Richmond, in 1835, is also an important variety especially adapted to the making of wine. It was at first somewhat in disfavor, but soon attained the popularity it has since held.

The first commercial vineyards were established in Albemarle and

Warren Counties in the early sixties. Albemarle County early attained fame for its wines, obtaining a medal over all American wines at the Paris Exposition in 1878 and again in 1889. The product reported in the census of 1890, was largely made in Albemarle and adjoining counties. It amounted to 10,868,00 pounds of table grapes, besides sufficient to make 461,000 gallons of wine. This placed Virginia sixth on the list of wine producing states, and eighth on the list of states producing table grapes. The industry has for various reasons declined since that date. Mildew and black rot, which became prevalent about 1890, are largely responsible for the decline, and though the growers soon learned to control these diseases, the majority of them lost interest in the work. The industry is now regaining its popularity, so that in Albemarle County there are at present about 400 acres of bearing vines. The product is used almost entirely by the Monticello Wine Company of Charlottesville, which produces about 40,000 gallons annually. The industry is also beginning to develop in Fairfax County, where there are a number of plantations with 4,000 to 5,000 vines. The fruit finds ready sale in Washington at remunerative prices as table grapes. There is rarely a failure or off year with this crop, and the industry can no doubt be profitably extended to almost the entire Piedmont section of the state. The Garrett Wine Company has recently established a large winery at Norfolk, in which they mainly use the Scuppernong, a variety native to the warm country south of Norfolk. This company produces about one and one half million gallons annually. The Southern Vineyard Company, located at Sandy Cross, just over the line in North Carolina, has 1,000 acres in grapes, the product from which is used almost entirely by the Garrett Wine Company.

PEACHES.

About the first really commercial venture in peach growing was an orchard of 4,000 trees planted by J. C. Moomaw in Botetourt County about 1865. The industry grew from this small beginning until about 1890, when the census credits Botetourt with 130,000 trees, the adjoining county of Bedford with 62,000, Roanoke with 35,000, and Fairfax with 50,000. The counties of Scott, Washington and Pittsylvania were credited each with over 50,000 trees. The counties of Essex and Westmoreland in the Tidewater section followed closely with 45,000 and 26,000 respectively, while the industry had made no progress worthy of note in Albemarle, Augusta and Frederick, now the banner counties. These figures indicate that except in Botetourt County the peach industry had scarcely begun in 1890.

Desultory plantings were made, however, at a much earlier date, and at times good prices were obtained for the fruit. An orchard was

planted in Fairfax County by D. O. Munson about 1852, the fruit from which sold for \$4.50 per bushel in 1858.

Though the San Jose scale had done considerable harm and caused some reduction in the rate of planting peaches soon after it became known, it has not affected this industry at all compared with the disease known as peach yellows. This disease destroyed the orchards of Mr. J. C. Moomaw at Cloverdale in Botetourt County about 1878, and, though the number of trees in the county is given as 105,000 in 1900, I feel quite sure there are not now in the county 25,000 bearing trees. The nearby counties of Bedford, Franklin, Roanoke and Montgomery felt the scourge of this disease at a somewhat later period. After this outbreak, large orchards were grown on the same soil in Botetourt County some of which were destroyed in 1898 and later by San Jose scale. The yellows after the first serious outbreak appears to have lain dormant, or nearly so, until within the past few years. It is now threatening the very life of the industry in the counties of Albemarle, Fairfax, Augusta, Frederick, Shenandoah, and others, and is quite widely disseminated in many sections of the state, where peaches are grown only for home consumption.

Why the industry has declined in the counties of Scott and Washington in Southwest Virginia, I am not now prepared to state, for the climatic and soil conditions are certainly favorable to the growth of this fruit. The late frosts in Tidewater and Middle Virginia operated quite seriously against this industry, though, as mentioned previously, Essex and Westmoreland Counties have attained in the past considerable note, and Greensville County is now building up the industry. While the increase in peach growing in Albemarle, Augusta, Fairfax, Frederick and other counties was marked between 1890 and 1900, amounting in some cases to as high as 1000 per cent, the increase since that date, for which we have no records except those gathered by the Crop Pest Commission, has been almost as marvelous. The number of trees examined by the yellows inspectors in Frederick County is a little over 250,000, though I am quite sure the total number of trees in the county must reach 500,000. The increase in Albemarle, Augusta, Shenandoah and Rockingham Counties has been about as marked.

As a rule, the later peaches are grown so that the main crop is ready for market about the latter part of July, just after the bulk of the Georgia crop has been disposed of. With such peaches as Late Crawford, Stump, Bilyeu, Heath, Salway, Smock, Albright, etc., the market can be held well into October, when there is very little competition. Some of these late peaches often bring upward of \$3.00 per five-eighths bushel crate. I have known a number of trees at three years of age

to bear two and one-half bushels of No. 1 peaches. Estimating 100 trees per acre, this gives something like \$250,000 gross proceeds, even if only \$1.00 per bushel is realized for the fruit.

The industry has developed in spite of the fact that peach yellows has been prevalent in a large part of the state during the entire period, though, as mentioned above, the disease now threatens to destroy the industry. It is interesting to note that a yellows law was enacted about 1890, but the opposition to it was so great that nothing was accomplished. The growers are now, however, alive to this great question, and there are at present 42 inspectors at work in the state. The foremost counties in this fight are Augusta and Fairfax, which have appropriated \$600.00 and \$1,000.00 respectively, to aid in the inspection work and enforcement of the law.

The number of trees in Floyd County has increased more than 500 per cent since 1900, though the bulk of these plantings are from 15 to 25 miles from a shipping point. The product in this county and also in Franklin and at some other points distant from the railroad is largely used for canning purposes, which proves that the peach industry is not entirely dependent upon railway facilities. There are a large number of isolated coves in this and other counties where a large grower could purchase a section almost surrounded by mountains and control peach yellows, practically without the co-operation of his neighbors.

Virginia is preeminently an apple growing state, but the growth of peaches, cherries, small fruits, etc., should have a very prominent place in the orchard economy. The apple being largely a biennial crop, the demand for labor is larger during a period of about two months at gathering time, once in two years, and should there not be a corresponding development in growth of the above fruits, the labor problem would soon be beyond control. By growing these fruits, however, and having them to ripen successively through the year, a large number of laborers can be held in the vicinity, thus helping to prevent the necessity of importing such a large number of workmen for gathering apples. The labor problem alone would make it undesirable for a grower to plant a very large acreage of any one fruit, especially if the entire neighborhood follows along the same line. I feel quite sure of my position in stating that the best returns are likely to be obtained by intensive work, from plantings that aggregate, on the whole, less than 25,000 trees.

APPLES.

The apple which has made Virginia famous at home and abroad is the Yellow Newtown, otherwise known as the Albemarle Pippin. This apple is largely responsible for the beginning of the export trade from

the state. In 1837, Andrew Stephenson of Albemarle County, then minister to England, had a winter supply of apples shipped to him in London, several barrels of which he presented to Queen Victoria. So delighted was she with this apple that she removed the small tax from it; and this fact, as well as her great admiration for the apple helped to bring it into such great prominence throughout Great Britain that the demand has ever since exceeded the supply.

Almost every small section where the Pippin grows to perfection has its own legend in regard to the origin of this variety. The earliest of these, so far as I can learn, dates to 1765, at which time there was a tree standing in a mountain hollow near North Garden on Mr. Southerland's land. Tradition has it that this was a seedling—the original Albemarle Pippin tree. Another account indicates that Dr. Thomas Walker, of Castle Hill, Albemarle County, brought scions of this apple from Philadelphia about the time of Braddock's defeat. The Patrick County legend is to the effect that a Mr. Jordan, grandfather of Mr. Geo. W. Via, one of the prominent fruit growers of that section, brought scions from Pennsylvania at the close of the Revolutionary War.

Whether pomologists accept the name Albemarle Pippin, or persist in calling this apple the Yellow Newtown, makes little difference, for it will always be known by Virginians and in the trade by the name Albemarle Pippin. The high state of perfection attained by this apple fully merits this distinction, and the almost fabulous prices often received for it. It is not unusual for our growers to sell their fruit for \$10.00 per barrel, and sometimes it brings as much as \$12, \$15 and even \$20 per barrel, or about two to three times as much as the average red apple. I am exceedingly sorry that it has been impossible to obtain any correct idea of the number of trees of this variety now being grown, or the quantity of fruit marketed.

The tendency of the Pippin is sometimes to bear early in life. Mr. John J. Miller of Rappahannock County and some other growers report orchards which bore at seven years an average of one barrel per tree. The yield of older trees is often phenomenal. Mr. J. H. Maxwell of Covesville has one tree in a small orchard which was planted by his father almost at the beginning of the 19th century, which measures eight feet, seven and three-fourths inches in circumference, and in its prime was fifty-two feet high and had a spread of limbs of fifty-two feet. This tree has, on several occasions and without any special care, produced \$100 worth of fruit, and in 1905 the fruit from this tree with fourteen others sold for \$700. One of Mr. Maxwell's best trees at present is thirty-five years old. It is six and one-half feet in circumference and

has a spread of limbs of forty-three and one-half feet. The medals taken by this and other apples from Virginia are too numerous to mention.

Perhaps the next most notable apple, made so by being adapted to a wide range of soil and climatic conditions and by its heavy bearing qualities, is the York Imperial. No doubt this apple has been more widely planted than any other three varieties in our commercial orchard sections. It is distinctly the apple of the Valley of Virginia. The growers say this is one of the best bearers, best shippers, best sellers and best keepers of the whole lot. Mr. E. D. Kendig of Augusta County, reports a yield in 1895 of 27 bushels from one tree 16 years old. He states that his father received 50 cents per barrel about 50 years ago, but he now gets from \$3.00 to \$6.00. Mr. Jas. Craig, also of Augusta County, reports an average yield of 300 bushels per acre, and at times, the phenomenal yield of 1,200 to 1,500 bushels per acre. Mr. Miller of Rappahannock reports an average yield of two and one-half barrels on eight-year trees. The Winesap is one of our very best sellers, suited mainly to areas in Piedmont Virginia, but it is also grown successfully in the Valley. While the prices received for this apple are as high as received for the best red apples, the yield is not quite as good.

Some of our native apples such as the Grimes Golden and the Virginia Beauty are also coming into prominence. The latter, which originated on the elevated plateau of the Blue Ridge about 2,000 to 2,500 feet above the sea level, is proving quite a fine apple for this section. The poor, down-trodden Ben Davis, though now planted less extensively, continues to be a money-maker. Arkansas (Mammoth Black Twig), one of the seedlings of the Winesap, is also being planted quite largely. Some of the growers in the Blue Ridge section even claim it to be more fruitful and a better keeper than York Imperial grown on the same soil. Some of the best northern varieties of red apples may yet prove of value on the elevated plateaus in this state, a promising apple just at present being the Esopus Spitzenberg. One tree was planted by mistake in a fifteen year old orchard at Covesville by a Mr. Watson. Dr. S. A. Robinson, who bought the farm eight years ago, found this apple, which has been pronounced by experts to be equal to the same apple grown in Oregon. It is worthy of trial.

The horticulturist of the Virginia Experiment Station, Professor W. B. Alwood, about 1887 began to call attention to the industry in the press and by lectures, pointing out the best varieties, character of soil to which they were suited, methods of cultivation, etc., and made a special effort to get planters to limit themselves to commercial varieties. This gave the industry a great impetus, so that between 1890 and 1900, the number of trees increased more than 100 per cent, amounting in some

of the important commercial sections to 250 per cent during the decade.

This increase is phenomenal when one considers that, during this time, the dreaded San Jose scale was found in the state, threatening the ruin of the orchard industry. A number of the smaller nurseries were driven out of business by this and other pests, and the planting of orchards received a set-back for a short time. However, with the control of the nurseries to prevent further dissemination of this pest, and the realization that it could be controlled in the orchard with the lime-sulphur wash, came a confidence that has renewed with more vigor than ever the interest manifested in orchards.

Planters found it necessary to use the lime-sulphur preparation or lose their orchards, and even as early as the winter of 1903-04, only a few months after the publications on this wash appeared in the state, the orchards were simply plastered with it, almost from one end of the state to the other. Though spraying was practiced to a considerable extent, it had not been adopted generally prior to this time. With the necessity of spraying for this insect, however, came the familiarity with spray work that caused it to be adopted much more generally. Within the last twelve months, a large number of power sprayers have been brought to the state, and in some limited sections as many as four to five gasoline sprayers are in use.

The bitter rot of the apple was, at one time, considered a very serious enemy also. While the general recommendation to spray with Bordeaux mixture has been made over and over again in the state, and followed out to some extent, it remained for the demonstration by Mr. W. M. Scott to bring this matter prominently before the Virginia growers. This work in the orchard of Mr. Goodwin at Afton, Virginia, proved successful, and growers in this section are generally adopting these methods.

The development, especially in the apple industry, is now at its high-water mark, the older growers being extremely enthusiastic as to the future of this industry. I could name fifteen to twenty large commercial orchard companies that have been organized in the state during the past two years. Much of this work, too, is being conducted wisely, the plans being based upon the conditions obtaining in the orchards in the immediate vicinity. The movement extends over the entire orchard belt of the state, from Eastern Piedmont almost to the farthest confines in the West. In Patrick County alone the companies recently organized reach an aggregate capital of \$100,000, and their plantings will amount to some 60,000 to 75,000 trees. In point of production of apples, the Valley section is now taking the lead. Though the statistics gathered by the Experiment Station for 1903 can not be considered as represent-

ing the entire crop, they are the best and most reliable we have, and serve to indicate to some extent the counties from which the largest shipments were made. In 1903, Frederick County led with 76,308 barrels, followed by Augusta with 40,957; and in the southwest Wythe County was not far in the rear with 25,000, and Roanoke with 23,952. Though Frederick led Augusta County in 1903, she must look well to her laurels, for in no part of the state do I consider the outlook brighter than in Augusta. The number of apple trees in Augusta would now likely reach 500,000, and her peach trees from 300,000 to 400,000. She has also quite a good inspection force, which is helping greatly in the fight against San Jose scale and peach yellows—a fight which is absolutely necessary if peach growing is to develop.

Some of the very best growers refuse absolutely to sell to dealers, preferring rather to superintend the picking, packing and marketing of their own fruits. For various reasons this should be more satisfactory than selling the apples on the trees, and should build up a reputation for the individual grower which is worth much as stock in trade.

The success of this method is proven by the fact that Mr. Miller of Rappahannock County, with some 12,000 to 13,000 trees, at times has received as high as \$9.75 per barrel for his Pippins and \$5.00 to \$7.00 for his best Winesaps and York Imperials. Other growers report similar success.

The tendency of many orchards in the state is to bear one crop in two years, but some growers are attempting to handle their orchards in such a way as to produce fair crops every year instead. Mr. Jno. L. Wissler of the Strathmore Orchard Company in Shenandoah County, has a large orchard of York Imperials, which bore their first crop when eight years old, averaging one-half barrel per tree. This yield increased annually to an average of three and one-half barrels the twelfth year—1906—with but one off year during the five-year period. One of his small orchards of Ben Davis bore one-sixth of a barrel at five years old and increased annually to an average of three barrels per tree at thirteen years of age, without a single off year. If our growers can, by mastery of the conditions, thorough and judicious cultivation, pruning, spraying, fertilizing, etc., succeed in producing a crop each year, an important epoch in apple growing will have been reached. Some of the important considerations are to prevent over bearing, and to supply the trees with sufficient nourishment when laden with fruit, to enable them not only to mature the crop of fruit but to mature a sufficient number of fruit buds to produce a crop the following year. Cultivation during the off year should be limited.

Occupying as she does almost the southern limit for the successful

growth of winter apples, and thus being near the southern markets, Virginia has the added advantage of nearness to shipping points for export, for she is within a few hours of Philadelphia, New York and other northern cities. This happy location, with her ideal soil and climatic conditions, railroad facilities, etc., give her a commanding position. She also occupies about the northern limit for the successful growth of very late peaches, among them the Bilyeu, Heath Cling, Salway, Smock, etc. The commanding position she has already obtained in the markets of the world for these fruits help to give her a prominence and outlook for the future of this commercial industry hardly equalled by any other state in the union.

REPORT OF COMMITTEE ON FINAL RESOLUTIONS.

The Committee on Final Resolutions beg leave to report as follows:

RESOLVED, 1st. That the thanks of the Society are due to the Reception Committee, whose efforts have contributed so much to make this meeting one of the most profitable and delightful in its history.

2d. That special thanks are due Mr. J. L. Babcock and the Norfolk Southern Railway Company for their kindness in arranging excursions and other entertainment.

3rd. That special thanks are due Mr. Paul Garrett for his courtesy in offering the Society opportunity to visit and examine his famous wine cellar.

4th. That the Society express its thanks to the management of the Jamestown Exposition for many courtesies extended.

5th. That we express our appreciation of the hospitality of The Inside Inn in placing their well appointed Convention Hall at our disposal.

6th. That we appreciate the work of the chairmen of the standing committees who have expended their time and energy for the advantage of the Society.

A. M. McNEILL,
ALBERT DICKENS.

On motion, the report of the Committee on Final Resolutions was adopted.

FINAL ADJOURNMENT.

[The following papers were not read at the meeting, owing to the absence of the writers and the lack of time.]

SOME FEATURES OF THE WORK IN DECIDUOUS FRUIT
INSECT INVESTIGATIONS OF THE BUREAU OF
ENTOMOLOGY.

A. L. Quaintance, in charge of Deciduous-Fruit Insect

Investigations, Bureau of Entomology, U. S. Department of Agriculture.

Upon the enlargement by Congress in 1904 of the Division of Entomology to Bureau rank several divisions or sections were established by the entomologist, Dr. L. O. Howard, to better facilitate administration and investigation, the work of each section including the insects affecting plants or crops of similar character on management, such as those affecting forests and forest products; cereal and forage crops; truck and garden crops; deciduous fruits, etc. While much attention of course had previously been given to the insects affecting these various classes of crops, the present arrangement permits of a greater degree of specialization than has heretofore been possible. Since 1905 the writer with several assistants has been engaged in work pertaining to deciduous fruit insects, and it may be of interest to refer briefly to some of the lines of work in progress.

LIME-SULPHUR WASH INVESTIGATIONS.

Anyone who has kept up with the considerable literature on this wash which has appeared since its adoption in the East as a treatment for the San Jose scale, must have been impressed with the great variation in recommendations as to the quantities of the respective ingredients which should be used and also as to the methods of preparation to be employed. Thus in the various recommendations the quantity of lime for each hundred gallons of the spray varies from twenty-five to eighty pounds and the sulphur from twenty-five to sixty pounds, and the period of cooking ranges from thirty minutes to three or four hours. The use of salt is insisted on in some instances, and its omission is advised in others. It is probably true that these variations, except in the case of the weaker washes, are of comparatively little importance so far as effectiveness in controlling the scale is concerned, but in the case of an insecticide and fungicide coming so largely into use it would appear highly desirable if practicable, especially from the fruit grower's standpoint, that there should be uniformity as to the formula and mode of preparation. Fruit growers have been urged by entomologists to pay strict attention to the carrying out of directions given and their frequent

failure to secure good results has been often attributed to their not having done so. In the present instance the orchardist is often at a loss to know which of the numerous formulas recommended should be employed. Some of the formulas furthermore are quite wasteful since the ingredients are not properly balanced and the cooking excessive; under present conditions of fruit growing no unnecessary expense can well be afforded.

These considerations led the Bureau of Entomology to undertake some experiments to determine the most economical formula and simplest method of preparing the wash consistent with efficiency. To make the test of wide application the work was carried out in three latitudes in the East, namely, at Fort Valley, Georgia; in Maryland in the vicinity of Washington; and in Western New York. Exactly the same scheme of experiments was carried out in these three localities, representing a considerable range of climatic and other conditions, and all features of the work were as nearly alike as it was possible to have them. In all, some twenty-eight formulas of lime-sulphur washes were tested during 1905 and 1906, covering the principal points connected with its preparation and use—as the relative proportion of ingredients; the strength of the wash necessary to kill the scale; the usefulness or otherwise of salt; necessary time for cooking; self boiled washes; fall and spring applications, etc. Considerable attention has also been given to devising washes less troublesome to prepare and of less disagreeable character, which features at present constitute important objections. The treated trees included apple, peach and plum.

Without going further into detail the conclusions thus far reached in these tests are about as follows:

(1) An efficient and economical formula is lime twenty pounds, sulphur fifteen pounds, water to make fifty gallons and boiled for one hour.

(2) Salt is not a necessary ingredient of the wash.

(3) The self-boiled lime-sulphur caustic soda wash is reasonably effective and should be used when it is not practicable to provide a cooking plant for making boiled wash. The self-boiled lime-sulphur wash is much less efficient and is wasteful.

(4) Applications in late fall give good results but are not so good as applications in the spring.

(5) Flour and flowers of sulphur are equally satisfactory.

From general observations, careless preparation and lack of thorough application are considered the principal causes of unsatisfactory results in the use of the lime-sulphur wash.

As a part of the investigation has been a careful study of numerous

chemical questions connected with the economical preparation and use of the wash, the Bureau of Entomology co-operated with the Bureau of Chemistry. This work has been reported upon in detail by Mr. J. K. Haywood in Chemistry Bulletin 101.

The lime-sulphur wash is eminently satisfactory as a treatment for the scale on stone fruits and mostly so on the apple. Numerous reports have been received, however, where the reported thorough use of the wash on the apple has not been followed with entirely satisfactory results. While there has not been difficulty to keep the scale sufficiently reduced so as to protect the life and health of the trees, a certain amount of the insects has survived and the young from these upon hatching in the spring make their way to the fruit, if this be present, where they settle and breed, with the result that the apples at picking time are so badly marked with the scale as to be practically worthless or of very inferior grade.

The successful control of the scale on very large apple trees is very difficult on account of the trouble involved in making thorough applications. Furthermore many of the insects settle under bark scales and thus largely escape the treatment. Fruit from such trees is likely to be much worse infested with the scale than in the case of younger trees where application can be made more thorough, and it has perhaps not yet been demonstrated that the insect may be so controlled on large trees as to protect the fruit from injury. An expedient adopted by some orchardists who have the scale problem to contend with in large trees, is the top working of these to summer varieties, such as the Duchess or Astrachan. In this way the fruit is gathered before the scale has become so abundant as to seriously injure it.

PLUM CURCULIO INVESTIGATIONS.

This important pest has been well treated by different workers and quite recently by Professors Forbes and Crandall of Illinois, more particularly in regard to its injuries to apple. The loss occasioned by this species to the peach, in view of the present large acreage in this crop is enormous, aggregating perhaps each year two or three million dollars. An investigation of the curculio, especially as a peach pest, has been in progress for the past two years, and thorough life history studies have been made in northern, middle and southern states. Experiments have been made with various sprays, as Paris green, different brands of arsenate of lead, etc., to determine their possible value in controlling the insect on this crop. Such arsenicals as Paris green, green arsenoid, arsenite of lime, etc., were soon found to be quite too caustic and were discarded. Some hope was placed in arsenate of lead, however, since when properly made, this is, from a chemical standpoint, free from any

soluble arsenic. In our experience, however, none of the brands of arsenate of lead have proven to be safe, their use being attended with important injury to the foliage and fruit. A home made arsenate of lead in which the ingredients were combined in proportions to produce an exactly neutral compound as determined by chemical analysis, proved even more injurious than some of the commercial brands. We have also tried arsenate of iron and arsenic sulphid, the latter reputed to be the most insoluble of all arsenical compounds. These arsenicals have been tried in northern, middle and southern latitudes, and while less injury has resulted thus far in northern localities, in the latitude of Washington and in Georgia, damage to trees and fruit in most instances has been severe. The extent of the injury will vary according as the season is dry or wet. In typical instances the foliage becomes shot-holed, much of it eventually falling, while the fruit becomes excessively reddened and brown dead patches appear mostly at or near the stem end, the injured portion soon being invaded by fungi, causing much of the crop to drop shortly before it is ripe.

It is clear that search must be made for other poisons than arsenicals for use on the peach, and further work will be prosecuted along this line.

CODLING MOTH INVESTIGATIONS.

Although this is one of our oldest insect pests and one that has been much written about it is only within apparently recent years that we have had a fairly complete knowledge of its life and habits, and there are still numerous important points about which more information is desired. There is also much need of exact experimental data to show the relative importance of sprays applied at different times.

In the life history studies it has been shown, contrary to the opinion formerly held, that the eggs of this insect are scattered almost promiscuously over the foliage, twigs and fruit. This information has been the basis for recommending late sprayings supplementary to the one given just after the petals fall. It had also indicated the practicability of lessening injury from the second brood, and in this connection it is necessary to have more definite information about the time of appearance of the moths of this generation, and from various parts of the country.

For the past two years the Bureau of Entomology has been investigating certain points in the life history of the codling moth, and has been carrying out extensive field experiments designed to show the value of treatments at different times during the season, made with reference to the transformations and habits of the insect in the orchard. Special attention is being given to determine the number of generations of the insect in various parts of the country, and also the effect of local conditions and climate. At the present time this work is being carried out

in northwestern Pennsylvania, in Ohio, in Virginia, the Ozark region of Arkansas, and in California. In general it may be said that in the more northern tier of states, as Maine and New York, there will be each year one full generation of larvae with some seasons a light partial second. Further south, as in Delaware, southern Ohio, and Missouri, the second generation will be more nearly a full one, while still further south as in the Carolinas, Tennessee, and Arkansas, there will be practically two generations of larvae each year, with a tendency toward a light partial third.

The experimental work with sprays indicates the great importance of making the application as the petals fall with exceeding thoroughness, a fact which has perhaps not been sufficiently stressed in the past. It has recently been shown by Prof. Ball of Utah that in making this application coarse spray is preferable to the mist like spray usually recommended. According to this investigator, a coarse forceful spray is necessary to drive the poisoned liquid through the circle of dried flower organs which effectively close the calyx cavity. These conclusions, which have not been verified, appear reasonable, and a thorough drenching of the trees at this time would no doubt be quite safe in an arid climate where Bordeaux mixture is not necessary for the control of fungous diseases. In the rainy climate of the East, however, where Bordeaux mixture and an arsenical are used in combination, such excessive spraying might cause serious russetting of the fruit. It might be practicable, however, if shown to be advantageous under eastern conditions, to make a very thorough and heavy application of the poison, following it by the usual spraying with Bordeaux mixture.

The habit of indiscriminate egg laying by the moth suggests the usefulness of spraying at a time when the young larvae will be hatching from the eggs in largest numbers. The information thus far secured indicates that for the first brood this will be about one month after the petals have fallen, and our experiments show that a thorough spraying of trees at this time is very important in reducing the insect, especially if the earlier treatment has not been a satisfactory one. The time to begin spraying for the second brood will depend upon when the moths are coming out in numbers, and must be based on life history studies in the respective regions, since this will vary considerably in different parts of the country.

While many orchardists are very successfully controlling this pest, a large number have made no effort to do so through ignorance of the benefits of the work, or are not obtaining best results from lack of attention to details. This lack of success in certain fruit districts has led the Department of Agriculture to inaugurate demonstrations in spraying

as object lessons, and for the past two years the Bureau of Plant Industry and the Bureau of Entomology have been co-operating in work of this character in southeast Nebraska and the Ozark regions of Missouri and Arkansas.

DEMONSTRATION SPRAYING.

Briefly, the plan has been to select representative orchards covering as wide a range of conditions and localities as practicable, and to carry out a plan of treatment designed to control as much as possible all of the insects and diseases affecting the fruit and foliage of the apple. In the regions mentioned it has been necessary to make five or six treatments to insure protection of the fruit and foliage from the several troubles that there exist. The work has been carried out on a commercial scale and an actual record kept of costs. At harvest time the fruit has been carefully graded and the results compared with those from untreated trees. This work has proven to be very valuable to the orchardists, and has resulted in an immediate improvement in methods of spraying. The writer believes that work of this character is urgently needed in many parts of the country, as the majority of our orchardists perhaps are not obtaining reasonably satisfactory results from spraying, largely because they are unfamiliar with such work.

PEACH BORER INVESTIGATIONS.

This insect has been the subject of comment by observing fruit growers from the earliest times, and our literature is burdened with recommendations for its control. It is still true, however, that no satisfactory plan has been devised of protecting trees from infestation. Recently the peach borer has been quite thoroughly studied in New York State by Professor Slingerland, and in Georgia by Professor Starnes. Although this species has been so well treated by the gentlemen mentioned, there are nevertheless important points to be determined concerning its life history throughout its range, and it cannot be said that a satisfactory method of treatment has yet been discovered. Despite a large amount of experimental work with various trunk washes and protectors, the digging out method, practiced for so many years, still retains first place, and is practiced perhaps by the great majority of peach growers today. The Bureau of Entomology began a study of this insect in the spring of 1905, and the work is still in progress. As a basis for the use of remedies it has been necessary to determine the period of emergence of the moths in localities representing a considerable range of latitude north and south. In connection with the other work at the field stations in the southern, middle and northern states, the pupation

period of the insects has been carefully determined, and the present year observations on this point are being made in Ohio, Missouri, Arkansas and Texas. A knowledge of the flight and egg laying periods of the moths will enable orchardlists to apply washes or do other remedial work much more effectively than is at present the case. The importance of information of this character is well illustrated by the studies of Professor Starnes' in Georgia. Contrary to the generally accepted belief that the moths emerge in the South as early as May, he has found, and his results are corroborated by our investigations, that the adults do not really begin to appear in that latitude until early August, greatly modifying the control methods to be practiced.

The admittedly unsatisfactory condition of present remedial measures makes further work along this line very desirable. We have had in progress for the past two seasons in different parts of the country tests of numerous washes and other preparations likely to be of use in protecting trees from infestation. Both young and old trees have been used and some interesting results have been observed as to the effects of the same wash on trees of different ages. Many of the commonly recommended measures appear to be useless, as well as others which from their nature should be quite effective. We have been disappointed in numerous preparations which we have devised, and though we have not given up the problem it must be admitted that at the present time no one treatment appears especially promising.

GRAPE ROOT-WORM INVESTIGATIONS.

Since about 1900 this insect has become a very serious menace to the grape industry in the Chautauqua and Erie grape belts. Its ravages in northern Ohio, with that of the grape berry moth a few years earlier, resulted in a great reduction of the grape acreage in that section, and its increasing injury in the vineyards to the north have naturally been the cause of much concern. In New York State this pest was well investigated by Professor Slingerland and Dr. Felt, and sound remedial measures proposed. The increasing ravages of the insect in the Erie grape belt in Pennsylvania led to provision being made by Congress for an investigation of this pest in that section by the Bureau of Entomology. This work, begun in a preliminary way in 1906, was greatly enlarged beginning with the spring of 1907. By reason of the careful work of Professors Slingerland and Felt on the life history of the insect, it has been possible to devote the greater part of our time to field experimental and demonstration work. Principally two lines of remedial work are being followed out, namely, thorough spraying of the vines when the beetles first appear and before they have deposited their eggs, and

thorough cultivation of the vineyard somewhat earlier to destroy the helpless pupae in the soil, which at that time are quite near the surface. Both of these lines of work were advocated by Professor Slingerland and it has remained for us to test their efficiency on a much larger scale than it was possible for him to do. Several five-acre blocks of vines in different parts of the grape belt are being treated, and work is also being done in the renovation by pruning, cultivation, and fertilization of vineyards already seriously injured by the insect. Other grape pests are also being investigated, especially the grape berry moth, which in that region is a very serious enemy of the fruit, destroying in some vineyards from fifty to sixty or even eighty per cent of the crop.

WORK IN CALIFORNIA.

Provision was also made by the last Congress for the establishment of a field station in deciduous fruit insect investigations in California. This work has been located in the Santa Clara Valley near San Jose, and attention will be given to the various insect pests affecting these fruits in that State. A study has been begun of the insects affecting fruits during the drying process in the open air and in storage houses, as bearing on the practice of sulphuring in use by packers, the necessity for which being in part attributed by them to infestation of the drying fruit by insects.

In the spring of 1904 a very serious and hitherto unknown enemy of deciduous fruits, namely, the pear thrips, made its appearance in the Santa Clara Valley, and its increasing ravages since that time have been the cause of much concern on the part of the fruit growers in the valley and elsewhere in the state. The life history of this species has been quite thoroughly investigated by Mr. Dudley Moulton, one of the writer's assistants, and from this information it is clear that the pear thrips will be a very difficult insect to combat. The adult thrips appear in the spring just as the leaves and flower buds of various deciduous fruits are opening, and these are at once attacked and fed upon. The essential parts of the flowers wither and die, thus destroying prospects for a crop. Practically all deciduous fruits are subject to injury, but certain kinds as the cherry, prune, peach and apricot suffer worst. Eggs are deposited by the female in the tissues of the plant, and the resulting young in some three or four weeks have obtained their growth and leave the trees, making their way beneath the soil from three to ten inches, where they remain during the summer, fall and winter without food, transforming to adults in the spring, appearing again above ground as the trees are bursting into flower and leaf. Sufficient experiments have not yet been made to indicate the best line of treatment for this new and formidable

pest, but it is probable that much benefit may be derived from timely cultivation; but this will require co-operation on the part of the fruit growers over a large area. The insect is gradually spreading and will possibly in time infest the principal deciduous fruit regions of that state. While it is not certain that the pear thrips in the East will be so destructive as on the Pacific coast, its introduction should be carefully guarded against. Other Pacific coast insects under investigation are the grape phylloxera, the western peach borer, the pear scale, etc.

MISCELLANEOUS INSECT INVESTIGATIONS.

In connection with the major lines of work above outlined, other species are being studied as opportunity permits.

In the study of the peach borer another borer affecting the peach was discovered to be very prevalent, infesting principally the trunks of the older trees occurring from Canada south to Georgia, in which latter section it is exceedingly abundant and causes serious injury. This insect, the lesser peach borer, (*Synanthedon pictipes*) has been carefully studied by Mr. A. A. Girault, and an account of it will soon be distributed.

The codling moth studies have revealed another serious enemy of the fruit of the apple in the United States, namely, the lesser apple worm (*Enarmonia prunicvora* Walsh). This species has evidently been confused by entomologists and others with the codling moth. The larva of this moth when full grown, is about the size of a half grown codling moth larva, to which it bears a general resemblance. It infests the apple in a way very similar to the codling moth, boring into the fruit a short distance at the blossom end and also eating out shallow patches just under the skin of the fruit later in the season. The species is at least two brooded in the more southern part of the country, and its life history evidently parallels quite closely that of the codling moth. We have bred this insect from apples from the middle western and eastern United States, ranging from Minnesota to Arkansas and from western New York to Georgia, and it is therefore quite generally distributed in the East. A careful study of its injuries in apple orchards in Arkansas the present summer indicated that it is there a pest of almost equal importance with the codling moth. A paper will shortly be prepared dealing with this new apple pest in the United States, but we think it will be safe to say at this time that the methods employed in controlling the codling moth will also be effective in keeping the larva of this moth in check.

FRUIT CULTURE IN NORTH CAROLINA.

W. F. Massey.

Commercial fruit growing commenced in recent years in North Carolina, little or nothing having been done in that line till about twenty years ago, though apples have been grown for generations with success in the western mountain section. The practice there of raising apple trees from seed has resulted in the production of many varieties, only a few of which have gotten into commerce, though there are many of local reputation that might be worth introducing to fruit growers. The mountain soil and climate are particularly adapted to the production of fine apples, and the North Carolina mountains have the advantage of the western Ozarks in the fact that the mountain soil of the former is far more fertile than that of the Ozarks. Lack of transportation has seriously interfered with the development of apple growing in the North Carolina mountains, and the one road that has had the monopoly of the region has placed the rates so high that they have retarded the industry, for it costs more to bring a barrel of apples from the Blue Ridge in North Carolina to the city of Raleigh than it does to bring one from Boston. Hence the New England apples have the market. Few growers, until recently, have practiced orcharding in anything like modern methods, and the apples of the mountain country have been produced generally in spite of absolute neglect, and because of the great adaptability of soil and climate for their production. But recently some intelligent growers have taken up the industry, and are planting largely and taking proper care of the orchards. About sixteen years ago Mr. Moses Cone, a wealthy cotton factor and mill man, bought a large tract of land on the Blue Ridge near Blowing Rock for a summer residence. He has planted about 49,000 apple trees and has taken the best care of them, and has shown magnificent fruit at the State fair in Raleigh. The late George Boggs planted an orchard years ago in Haywood County, the fruit of which has twice carried off the blue ribbon at Madison Square Garden, New York, in competition with the whole United States. This orchard, in the hands of his family, is still kept up. Others have planted in the same county, and there have been two or more companies formed for the growing of apples in the Blue Ridge country, and the prospect is that with improved facilities for marketing, and better knowledge of packing and shipping, the apples of the North Carolina mountains will soon be the main reliance of the South Atlantic markets.

Over the warmer sections of the state very little attention has been paid to apple culture commercially, though early summer apples have been shipped from the eastern section of the state, and good

apples of the winter class have been produced at the Sub-Station of the State Experiment Station in the sand hill country at Southern Pines. But except in the more elevated part of the Piedmont country near the foot of the Blue Ridge, it is hardly probable that winter apples can be grown with profit in the warmer parts of the state.

Pears of all sorts have been found to do well in the eastern coastal plain, but few attempts have been made to grow them for market, with the exception of the Keiffer. This and the LeConte are grown in all the warmer parts of the state. But the northeastern part of the state will grow all the finer pears well, as has been shown by those who have attempted their cultivation. It is believed too that the finer pears will thrive in the mountain valleys, though few attempts have been made to grow them. Cherries, except the sour cherries, do not thrive at all in the warmer parts of the State, but as we come westward towards the mountains and attain an altitude of 1,000 or more feet above the sea, all the finer cherries flourish finely, and could be made a source of great profit if packed and shipped in the California style, for the crop comes in nearly with the California crop. Little has been done with this fruit in a commercial way, however.

Plums of the Japanese species thrive wonderfully in all parts of the state, and have been found profitable by many growers. The Wild Goose has also been considerably planted and has paid very well. The finer European or *Domestica* plums will also thrive under proper care, as I have demonstrated at the Experiment Station in Raleigh, but few growers have attempted them owing to the care that must be taken to preserve them from the curculio and fungus diseases. I found an old plum tree in a woods near Raleigh, covered with black knot, but still in its neglected and wild state bearing fine large blue plums, right under the shade of great oak trees, showing what could be done with care in the best class of plums.

In the upper Piedmont and mountain sections peaches thrive wonderfully when planted on the high and exposed ridges. In one elevated section in Stokes County, where I admired the beauty of the peaches shown at an institute, I was assured that the crop had never failed there in twenty-five years, and when I urged the farmers to plant for market they said they had never thought of it; and they were growing tobacco when they had good transportation to the towns east of them where peaches are always scarce. I have never seen finer peaches anywhere than in the mountain country west of the Blue Ridge, but peaches there could hardly be made to pay for northern shipment as, owing to elevation and lateness, they would come in competition with the Maryland crop.

The most extensive peach growing for market in North Carolina is in the sand hill country about Southern Pines and Pinehurst. The largest orchards there are those of the Lindley Orchard Company near Pinehurst. These orchards have about 100,000 trees. Other large orchards of peaches have been planted in the same section and further west, and the growers have been encouraged by their success. In general, Piedmont country peaches have not been a commercial success, owing to the frequent loss of the crop from untimely spring frosts. On the foothills of the Blue Ridge, in what are known as the "thermal belts," peaches can be grown with great success, as these belts on the mountain sides never suffer from late frosts, since the cold air sinks into the valleys and pushes up the warm air so that in fall and spring vegetation is never hurt untimely. On the coast plain peaches have never been and probably never will be a commercial success, though on the higher and more sandy soils they thrive well, and can be made useful as a home crop.

Some years ago extensive plantations of grapes, mainly of the Niagara and Delaware varieties, were made in the sand hill country about Southern Pines. Since the fruit ripens in July, the culture was quite profitable for a time. Then came the scare in the northern cities about the danger of the copper sulphate used in spraying, and the market dropped badly, and in fact has never recovered to its former profit, though some large vineyards are still kept up and make a profit.

But the greatest development in North Carolina has been in the culture of the strawberry. This industry began at Mount Olive, a station on the Atlantic Coast Line Railroad, and has gradually extended southward to Wilmington. Then east of Wilmington a colony of Michigan people settled and founded the town of Chadbourn. They found their soil adapted to strawberries and have made a great success. Chadbourn berries are the first really fine strawberries that go north, and they soon displace the inferior fruit from further south. I have no statistics at hand to which I can refer, but it is safe to say that the strawberry output of eastern North Carolina runs well up in the thousands of car loads, and has brought wealth to many. Land about the town of Mount Olive which fifteen years ago could have been bought for ten dollars an acre cannot now be had for \$200 an acre, because of the profitableness of the strawberry culture.

Figs flourish in all the warmer parts of the state, and especially on the immediate coast, but they cannot well be shipped as fresh fruit, though they might be profitably preserved in tin cans. The humid climate forbids drying to any extent.

Considerable attention is being paid to nuts, particularly the pecan

in the eastern section. Some plantations have been made of the Japanese chestnut and walnut, while extra fine nuts of the so-called English walnut have been produced, and this nut could be made profitable commercially.

This statement could have been made more complete had I had time to refer to publications, but having prepared it at the last moment I have had to rely upon my own recollection and observation.

THE GROWING OF EARLY APPLES IN DELAWARE.

J. L. Soper, Magnolia, Delaware.

As we pass through the state we see small apple orchards which were planted years ago. These orchards were planted to supply the needs of the families during the greater part of the year, and consisted of the best known varieties. No attempt was made to realize large profits from them. It was thought that the only sections where apples could be grown successfully were in the northern states. Almost everyone, including those who were authorities on horticultural subjects, maintained that the soil and climatic conditions of Delaware were unfavorable to the highest development of apples. The late J. G. Brown was the first man to advance the theory that there was a future in Delaware for apples. Forty years ago he came to Delaware, but several years passed before he set his first commercial orchards. This first move on his part was an experiment, because it was not known at that time which varieties would prove profitable; and through lack of such valuable information the first planting consisted of many varieties. The Early Ripe and Red Astrachan were among the number he planted first, and today they are considered two of our most profitable varieties. Following Mr. Brown came other men who were interested in the growing of apples in the state, and as the result of their labors we have many good varieties. During later years it has been proved that Yellow Transparent, Fourth of July, and Williams can be grown profitably in Delaware.

The apples of Delaware may be divided into three classes—early, summer, and winter. The summer class is the least profitable of the three. It is a well known fact that when there is a crop of peaches in Delaware our summer apples will not sell. Of the two remaining classes, I consider the early the more profitable. The season during which we have to combat fungus diseases is much shorter than that of the winter class, therefore the amount expended for spray materials is not so large, and there is also saving of labor in applying. There is also less liability of having so many destructive storms. It has been proven,

after years of testing, that the varieties best adapted to the conditions existing in Delaware are Early Ripe, Yellow Transparent, Fourth of July, Red Astrachan, and Williams.

Apples can be grown in all parts of the state, except where there is an over-abundance of moisture. The soils of the northern part of the state are mostly clays. In New Castle County there are no large tracts of sandy or loamy soils, while in Kent and Sussex there are large areas of these light soils. These light sandy soils of the two lower counties are deficient in those elements which are essential to the profitable growth of the larger fruits, therefore it is necessary for us to increase the fertility of these soils. We do this by means of farmyard manures, commercial fertilizers, and cover crops. The last two ways are probably the most practicable means by which the fertility of the land can be increased, because the amounts of farmyard manures are so small that it would be impossible to enrich a large tract of land without a large expenditure of money. What is needed for the average soils of Delaware are phosphoric acid, potash and nitrogen. Nitrogen should be applied in the form of nitrate of soda, potash in the form of muriate of potash, and phosphoric acid in the form of South Carolina rock. We can by means of cover crops increase the fertility of our land very much. The best leguminous plants to use are scarlet clover and cow-peas. Although orchards planted in our heavier soils will produce fruits of large size and high quality, it is impossible to get the color. It is one of the great surprises to those who are interested in this division of horticulture to learn that on the sandy soils apples can be grown that are as large and of as good quality as those grown on our heavier soils. Our sandy soils in fact are ideal for the growing of apples. The largest orchards in the state are to be found in Kent County, and it is from these orchards that our best fruit of the highest color has been taken.

A large portion of our earlier planted trees were large, being two or more years old, but of late the plan of setting year-old trees has grown in favor with the majority of growers, and this can be accounted for easily. As soon as the people recognized that the apple could be grown profitably in the state, they became anxious to plant. The fever reached such a height that even though many preferred the older trees they were willing to accept anything from the nurserymen, as long as it was true to name. Many men at the present time prefer the year-old trees because there is no difficulty in forming the heads. The general plan is to have a central leader with either three or four branches spirally located around the stem. The objection that many have to the two- and three-year-old trees is that it is almost impossible to form a proper head. There are orchards in the state in which the trees were

two years old when planted, that have well-formed heads, though a very small portion of them have heads that are not pleasing to the sight.

Buyers of trees are demanding of the nurserymen that the scions for propagating purposes be taken from the fruiting orchards. They are avoiding trees that have been grown by nurserymen who take scions from the nursery row, or even water-shoots from bearing trees. Trees thus propagated do not begin to bear fruit as soon as those propagated from properly selected wood. Too little importance can be attached to the selecting of scions. Practical growers are convinced that in order to secure the best results the scions should be cut from the ends of the limbs of prolific bearing trees, for such trees will produce better fruit than others of the same variety. No doubt the best plan to follow is to select vigorously growing trees which have been grown in the nursery row two or three years, and top work them to the desired variety. The scions should be cut by the grower from trees in his own orchard which are known to be prolific bearers of large fruit of the highest quality and the highest color. By having the trees top-worked on his own farm he never need fear that he will find them not true to name when they begin to bear.

Nearly all the trees are headed from two and one-half to three feet high. There are some orchards that have been headed low, composed of such varieties as Yellow Transparent and Fourth of July. As it is the practice of the growers in the state to cultivate close to the trunks of the trees, they do not care to have the trees headed very low. With such varieties as Yellow Transparent and Fourth of July there is but little difficulty experienced in keeping the soil well cultivated near the trunks of the trees. If the other varieties were headed low it would be impossible to cultivate so closely.

The main point that we keep in mind when planting an orchard is to utilize as much of the space as possible, therefore the plan of setting the trees twenty feet apart is adhered to. When the trees that were not intended for the permanent orchard begin to crowd they are removed. Those varieties like the Red Astrachan that are known to be vigorous growers with spreading habit are planted forty feet apart. Some orchards have been double planted, that is, in the centre of each square a tree is planted. It is seldom that one will see Red Astrachan planted as close as twenty feet. The other varieties are planted twenty feet apart, and such varieties will produce many crops of fine fruit before it is necessary to remove any of the trees. Our fields are marked out with two-horse plows, by using which the holes for the trees are half dug. Before the trees are placed in position the tops and roots are properly pruned. As a rule, the trees are set three inches deeper than

they were in the nursery row. After the trees have been planted the ground is prepared for either corn or tomatoes. If corn is planted, four rows are planted in each land. At the last working of the corn, clover seed is sown. Four rows are planted the second year, but if the trees have made a very good growth only three will be planted the third year. Some prefer to alternate with corn and tomatoes. In either case, clover is sown at the last working.

Conditions in Delaware make it necessary to employ a different method of culture than is practised in some other sections of the country. It is essential that our orchards be cultivated. Orchards that have been in sod for years will not produce apples as large and as highly colored as those grown by the clean culture method. I know of one orchard in particular in which the trees became weaker year after year, until many of them died. The owner of the orchard then plowed and cultivated it, with the result that many of the trees were revived and have been producing large crops of fine fruit ever since. It is the custom of our most progressive growers to begin the cultivation of their orchards early in the spring by plowing to a depth of three or four inches. The plows are started as soon as the frost is out of the ground, regardless of the scarlet clover. Our trees must have moisture if we expect them to produce crops, and if the clover is allowed to mature or even to grow until it is several inches high too much moisture will be pumped out of the soil, and the trees will suffer. After the orchards are plowed they are leveled immediately. From this time on the orchards are harrowed once a week in order that a mulch of loose earth will be maintained to prevent the loss of moisture by evaporation. The cultivation of the orchards does not cease until we start to pick the fruit, and when picking is over the ground is prepared for the cover crops. Scarlet clover is preferred by many growers to cowpeas. The general practise is to do the seeding during the last of July or the first of August, but of course the weather conditions regulate the exact time of sowing. By this early cultivating one gets an early growth of wood which has a sufficient time to harden after the cover crops are sown.

Although our trees grow rapidly when they receive the proper care, severe pruning is not practised. Only enough branches are removed to prevent over-crowding and to admit the sun's rays to almost every part of the tree. Successful pruning depends upon the knowledge of the soil and growing habits of the varieties.

During the early development of the apple industry in the state, apples could be grown that were free from any blemishes due to fungus diseases, without any expense to the grower for spraying. Although the early-apple industry in Delaware is practically in its infancy, we

have the well known insect pests and fungus diseases to combat. It is impossible to grow apples successfully unless the spraying is done thoroughly. In this respect the early class has an advantage over the winter class. In growing the winter varieties the season through which we must be spraying at the proper times is much longer than that of the early class. Whenever the bitter rot has made its appearance it is necessary to keep the fruits copper-coated throughout the entire season. The efforts of the grower will be in vain unless the spraying is thoroughly done. This disease, which is dreaded so much by the grower of winter apples, has never developed in our early varieties. We spray our trees with Bordeaux before the buds begin to swell, using 4-4-50 formula. This first spraying must be done thoroughly, if the scab is to be controlled. After the petals have fallen we spray again, using the same formula as at first, to which an insecticide is added. Paris green has given the best results, and is added at the rate of one pound to seventy-five gallons of the mixture. This second spraying is followed by a third, after an interval of ten days. Our experience is that the third spraying is not essential, because whenever the second spraying is done thoroughly the apples will be free from fungus diseases, and uninjured by the codling moth. Previously to the past two years we used the 4-4-50 formula in spraying all our trees, but each year the copper sulphate russeted the Williams. In the spring of 1906 Professor C. P. Close carried on an experiment in spraying the Williams. In the hopes of preventing the russetting only two pounds of copper sulphate to fifty gallons of water were used. It was found at picking time that only nine specimens were injured, and these but slightly. All the apples were clean, no fungus having developed on them. Last spring all our Williams were sprayed with the half strength formula, and again there were no signs of any fungus. After the experience of the last two years we feel confident that a mixture of half strength will prevent development of fungus diseases on the Williams. To my knowledge no experiments have been carried on in our state with a half strength Bordeaux on the other early varieties. We believe that a half strength solution will prove equally effective on the others.

THE CHERRY OF THE NORTHWEST.

C. E. Hoskins, Springbrook, Oregon.

About 1849 the bringing of cultivated fruits across the plains to Oregon was successfully undertaken by Henderson Luelling. Selecting a large number of the then known varieties, he planted them in boxes of soil and hauled them across the plains in a large wagon drawn by

oxen. These trees were set out in the fall of that year at the place now known as Milwaukee, about eight miles above Portland on the east side of the Willamette River. It was at this point in later years that Henderson and Seth Luelling conducted the first nursery business to be established west of the Rocky Mountains and north of California. In this traveling nursery had come cherries of three classes—the Bigarreau or French, the Morello or English, and the Mahaleb, a native of the shores of the Black Sea. The label of the Napoleon cherry having been lost on the journey across the continent, this variety was renamed by Mr. Luelling the Royal Ann. The lack of seeds and consequent scarcity of stocks caused the Luellings to use native wild cherry (*Prunus demissa*) extensively for this purpose. Many old trees on these stocks are still doing well. As soon as Mazzard seeds could be obtained and seedlings grown, the wild stocks were discarded. The planting of seeds of the Bigarreau class caused Seth Luelling to begin selecting the best looking seedlings, and to fruit them by grafting them upon bearing trees. In this manner were produced the Luelling, Black Republican, Lincoln, Willamette Seedling, Bing, and others.

Until the last few years it has been thought that the commercial cherry must be large, solid, and dark in color, and shipped fresh from the tree. The first plantings of these commercial varieties were made mostly along the rivers in the Willamette valley, because the trees had done so remarkably well at the old nursery. Most of the native seedlings of any prominence were the introductions of Seth Luelling, and there is only one of later years that is being extensively planted—the Lambert. Undoubtedly the largest cherries in the world are produced in the region watered by the lower Columbia and Willamette Rivers. They will average nearly an inch in diameter, and selected specimens have measured one and three-eighths inches in diameter.

CLIMATE AND SOIL CONDITIONS.

The climate of the Willamette valley and lower Columbia is not exactly adapted to the requirements of the Bigarreau cherries, as the temperature there is several degrees too high. The winters are also too long, and there is not a sharp enough contrast between winter and spring. If cherries are planted on south exposures, the sap flow starts too early in the spring; but after settled weather comes, the conditions are almost ideal. Well-informed cherry growers now recommend red hill-soil, and a north or west slope. The principal soil formation is basaltic, deep and strong; this, with abundant sunshine, gives the cherry—and in fact all fruits—rather more color than in the Middle West. To the cool, moist nights is attributed the large size and superior canning

qualities of the cherries of the Northwest. Merchants are now predicting that the leading canned cherry of the future will be produced within a radius of a few hundred miles around Portland.

VARIETIES RECOMMENDED.

In past years most plantings were to a large extent experimental, and many varieties turned out to be fit only for home use. The writer has fruited all the promising seedlings of the United States, and also most of those imported from other parts of the world. Of the latter varieties he finds only one that is of value in this country, namely, the Baltavari, which was imported from Hungary about 1890. It is of the Bigarreau type and resembles the Napoleon, except that it is from ten days to two weeks later. Most canning companies buy only pink or light colored cherries, such as Napoleon, Baltavari, Governor Wood, Rockport, and Elton. Black or maroon cherries are shipped to near-by markets, and eaten out of hand. Conditions here are almost perfect for growing the Duke and Morello cherries, but these are too soft to ship, and not good for dessert use.

THE CHERRY AS A COMMERCIAL FRUIT.

The climatic conditions of the northwest are not the best for growing shipping cherries, unless these are sent to nearby markets. The fruit is too large and tender, though some of the later kinds were shipped this year to Los Angeles, San Francisco and Denver. These were packed in the regular ten-pound box and sent by ordinary express, yet they arrived in good condition, and none were sold for less than twenty cents a pound.

As nearly as can be ascertained, the amount of cherries grown and canned in this region in 1907 was 2,200,000 pounds. The price paid for these was four cents a pound delivered. Reliable information is difficult to get, yet these figures are conservative. Enough is now known of the industry to make cherry growing of assured profitableness in the hands of the intelligent grower.

PART II.

Reports of Committees

GENERAL FRUIT COMMITTEE.

S. A. Beach, Chairman.

[The report of the Chairman was read before the Society, and is printed in the body of the Proceedings. The reports of the State Committeemen are given here.]

The following letter was sent by the Chairman to each of the State Chairmen:

TO CHAIRMEN OF STATE FRUIT COMMITTEES.

In making your report please feel at liberty to treat those subjects which appear to be of most importance, whether or not they are included in the following list. I would suggest that the topics named below are worthy of especial attention.

1. Improvements in methods of gathering, grading, handling and shipping fruit.

2. Associations or organizations of fruit growers and shippers for the purpose of marketing fruit or purchasing supplies.

3. Opening of new markets or other changes in fruit trade.

4. Varieties worthy of special mention, either new ones which are proving valuable or old ones which are being superseded by something better. State the particular faults or the points of excellence which are determining the course of the variety.

5. Name your leading commercial varieties, indicating the regions where chiefly cultivated.

6. Noteworthy information concerning injurious insects or plant diseases.

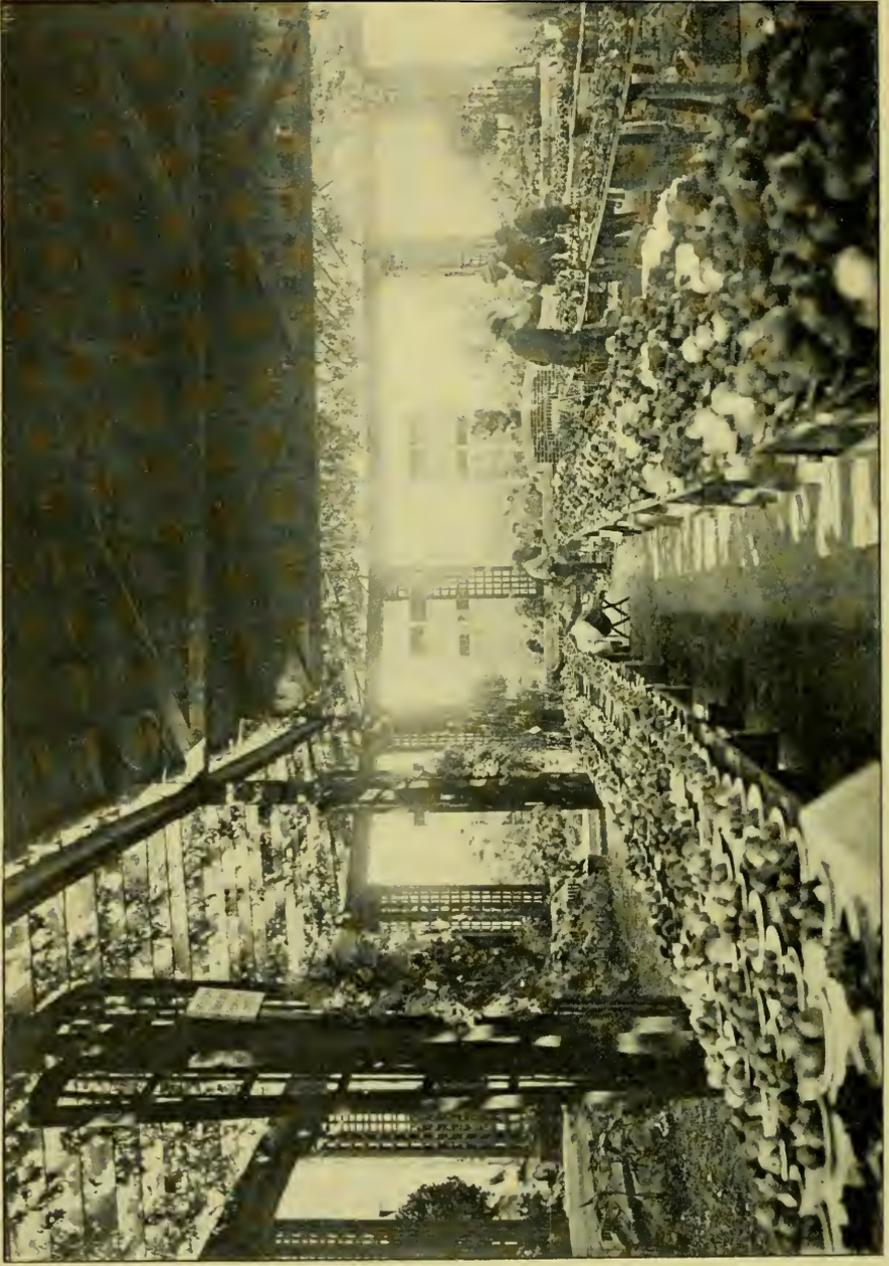
7. Progress and present status of orchard and nursery inspection.

8. Development of cold storage and transportation of fruit under refrigeration.

S. A. BEACH,

Chairman General Fruit Committee,

American Pomological Society.



FRUIT DISPLAY OF THE SOCIETY IN THE COURT OF THE PALACE OF STATES (ANOTHER VIEW.)

MAINE—POMOLOGICAL DISTRICTS 1 AND 2.

D. H. Knowlton, Chairman.

The great difficulty in Maine this year is to get sufficient help to gather the apples. There has been a general discussion of grading, handling and shipping fruit. This has been carried on in the Granges of the state and in the farmers' institutes. In the absence of sufficient storage for fruit, many growers are selling the apples as soon as harvested, or without putting them into storage. While boxes are not in general use, for choice fruit their use is increasing.

Most of the fruit is handled by the buyers, and the larger part of the winter fruit goes to Europe, being shipped mostly from Boston.

Through the influence of members of the Grange a co-operative association has just been organized for the purpose of selling generally all the products of the farm. As yet the association has transacted no business. Its purpose is so far as possible to save for the purchaser as much as possible of what otherwise would go to the middleman.

Another association known as the Central Maine Orchardists' Association has just been formed. This association will aim to market produce directly by means of an agent. The secretary is Horace Newell, Winslow, Maine.

The commercial fruits of Maine are sold largely for export, the points of export being Boston and Portland, the larger part going from Boston. Many Canadian apples come down over the Grand Trunk Railway and the export figures include these, in fact are largely these fruits from Canada.

More and more our apples are finding markets in other states, and frequent shipments have been made to Ohio, Pennsylvania and states farther west.

Maine apples are now largely sold to shippers, though many have been shipped direct to foreign houses, but returns were not always satisfactory, at any rate uncertain. The last two years when the fruit was not bought outright, much has been shipped on guarantee of price. For export this plan seems to meet with favor just now. As a rule the grower gets only the guaranty.

There are no provisions for extensive storage in Maine. The industry to a large degree has outgrown the capacity of the growers themselves for storage, consequently a large part of our fruit has to be disposed of before cold weather. It is an unfortunate situation for the grower, since it places him at the mercy of the buyer.

In recent years my information leads me to the conclusion that more Ben Davis and Stark have been set than other varieties. In one

of the largest and best orchard towns, of the trees set last spring nine-tenths were Ben Davis. As may be seen by this, it has been a popular variety with growers, and it may not seem strange when it is known that orchards of this variety bring early returns. As illustrative of this one orchard of 750 trees, set about ten years ago, in 1905 and 1906 cleared up \$800 each year for its owner. The winter of 1906-7 was severe, and fully seventy-five per cent of these trees were killed outright or seriously injured. The injury to the Ben Davis from the cold of last winter will run from ten to twenty-five per cent through the state. The Baldwins suffered on the low lands, but I doubt if it will exceed ten to fifteen per cent. Some other varieties of which we have hardly trees in considerable quantity, suffered less.

The Wealthy apple is gaining in favor, and the records made fully warrant it. Its chief fault seems to be in its habit of overbearing, a fault that Maine growers as a class, have never remedied by thinning out the fruit. The Milding has an excellent record and deserves to be grown more. The tree seems to be entirely hardy and the fruit of excellent quality. The Rolfe, a Maine variety, is making a good showing, and if weaknesses are not found, will be one of Maine's most popular apples in years to come. (See Bulletin 143, Maine Experiment Station, by Professor W. M. Munson.) When spraying is practiced, other varieties will be more generally grown for market that have been condemned in consequence of the scab. The Ben Davis tree for several years has shown signs of weakness, and the Baldwin, as our growers well know, must be limb-grafted to thrive on high land.

The Baldwin is still the leading commercial variety, though during the last few years other varieties have been gaining upon it. It is not, however, successfully grown in the northern part of the state. Rhode Island Greening is found in the older orchards. Roxbury Russet is profitable in Kennebec County and also in other parts of the state. Fall Harvey on the hilly lands of Oxford and Franklin counties is profitable. The Northern Spy is a good variety in Maine and brings good prices when carefully handled. The Yellow Bellflower has many friends in Kennebec County, though some object to it as not being a good apple for shipping.

Of the more recent varieties introduced the Ben Davis is in the lead. Over a large area it has grown well and comes into bearing early. The past winter was too cold, evidently, and many trees were injured. It is possible that the trees have been permitted to bear too freely. The Wealthy when properly handled is a profitable variety, and there are some good orchards of this variety. Many Stark are coming into bearing, and they seem to be popular both with the buyers and the growers.

Several of the earlier varieties are bringing good money to the growers. With the nearby market they have in Boston, growers are in many cases disposed to grow more of the early fruit. In Aroostook County, Dudley's Winter is generally grown, and there are many new orchards coming into bearing.

As yet the brown-tail and gypsy moths have not materially injured the fruit trees of the state. These insects of foreign introduction have been found in the southwestern part of the state and along the coast. They have been held in check by the work of the state, towns and individuals. It is hoped that they may be eradicated. Neither of these insects has caused serious injuries in the interior of the state. In fact most of the interior orchards are entirely free from them.

The past two years the yellow-neck caterpillar, the red-humped caterpillar and the fall web-worm have done much injury. The present year (1907) many small trees have been stripped by them. The *Trypeta pomonella* is a troublesome insect, and we fear is covering a wider range each year.

Prof. E. F. Hitchings, our State Entomologist, has made a careful inspection of the nurseries and greenhouses in the state. At the last reports he had nowhere found the San Jose scale.

There has been little progress in the way of cold storage, save that more or less individual growers have built storehouses for their own use. This storage of apples is now the one great need in the marketing of our Maine fruit. Co-operative marketing has been organized, but no home storage has been provided.

NEW YORK—POMOLOGICAL DISTRICTS 1, 2 AND 3.

Willis T. Mann, Chairman, assisted by J. R. Cornell, T. B. Wilson, B. J. Case, and Irving A. Wilcox.

There have been no striking developments in the fruit industry of New York during the past two years, though there seems to be a tendency to grade and handle the fruit more in accordance with commercial standards. This is more especially true in the case of the larger commercial growers, who appreciate more fully than the small growers the value and importance of business methods and standards in the handling of fruit products. There has been an increased tendency among the larger apple growers to store their product for the winter market, and these growers usually recognize the importance of careful grading in order that the best prices may be realized. All growers, however, are seriously handicapped in the adoption of improved methods by the scarcity of competent help, as the labor problem is becoming more and

more acute. It has been thought that this difficulty might be overcome in a measure, and more uniform and better packing secured by the adoption of central packing houses to which growers could draw their fruit direct from the orchard as picked. This would do away with the labor and supervision of packing by individual growers. No practical plan of this kind has yet been adopted, nor have we any organizations of growers for handling and marketing fruit products, except among the grape growers of Chautauqua County. They have a successful organization that handles about 1,000 car loads of grapes per year, retaining one-half cent per eight pound basket for doing all the business.

The evaporated fruit interests have been much encouraged by the opening of new markets for their products in South America, to which several car loads were shipped during the past year.

The Baldwin and Rhode Island *Greening* are the two great commercial varieties of apples throughout the state, and instead of losing ground they are, if possible, gaining in popular favor. Among pears the Bartlett is unquestionably the most popular. The Keiffer has been planted very largely but is losing ground. In the Hudson Valley the Clapp Favorite is very popular, and would rank still higher if it were not for its tendency to blight. Among peaches the Elberta holds high rank, though Stevens Rareripec holds first place in the Hudson Valley. From this section it is also reported that the William Belt strawberry, the Wilder currant and the Eldorado blackberry are taking first rank. In the grape regions the Concord is still the unrivaled leader.

The San Jose scale has spread over the state very rapidly during the past two years, and is now common in most fruit sections; but with increased experience, growers are becoming more confident of their ability to control it. As a rule there seems to be a succession in the development of insect life that makes those that are important in one year or period of time give way in a succeeding season to some other species, so that those that are important in one season may not be important in a succeeding season. In 1906 the codling moth had an unprecedented development. The grape root-worm in the Chautauqua grape belt and the oyster-shell scale in the orchards of central and western New York caused serious alarm in 1906, but now are seemingly unimportant. The present season the blister mite is causing much anxiety to orchardists in central New York. The pear psylla, that caused such widespread damage a few years ago, has ceased to exist in many orchards.

Plant diseases vary in their development from year to year as climatic conditions prove favorable or unfavorable for their growth.

Nursery and orchard inspection is being continued and perhaps improved somewhat, but is still far from adequate. The growers of our

state, however, are becoming each year more intelligent and self-reliant, and on the whole there is a feeling of unshaken confidence in the future.

RHODE ISLAND—POMOLOGICAL DISTRICT 1.

G. E. Adams, Chairman.

The fruit growing interests of Rhode Island at the present time are probably more largely those of the owner of the small country place or village yard than of the commercial grower. In visiting the various villages of the state one cannot fail to notice the interest taken in the growing of fruits. Much attention is given to the culture of small fruits as well as a few fruit trees, and in this way a much more constant supply of fresh fruit is furnished the owners of many of the small village lots than is to be found in large numbers of the farm homes.

Commercially, there are golden opportunities for pomological work within the state. Much of our soil is well adapted to fruit culture, and for markets there are none better to be found, as the many manufacturing towns offer an outlet for all the fruit which can be produced. At the present time it would be a safe estimate to say that not ten per cent of the fruit consumed is grown within our own borders.

In former years the best orchards of the state were to be found in the northwestern section. These are now past their prime, and producing but very little fruit, of poor quality. At present the central northern and northeastern sections of the state are producing the larger proportion of the apple crop of the state. In these regions there are many young and vigorous orchards which are giving their owners a very good revenue. As we approach the seacoast more attention is given to the growing of strawberries. During the past two winters the brambles have suffered severely from winter killing. These fruits are, however, of comparatively slight importance commercially, owing to the oft-recurring loss by winter injury. During the past winter, the peach buds were practically killed over the entire state with the exception of a few orchards upon the island of Rhode Island, which escaped, due probably to the influence of the ocean which surrounds it.

In orchard management more attention is being given each year to culture, fertilization and spraying. In the younger orchards, culture and cover cropping is the rule; in the older orchards, sod is more often found. Spraying is receiving more attention each year, especially that which is directed against the San Jose scale, as this pest is doing a great deal of damage to the fruit growing industry of the state. At present the remedy which is used more than any other is the lime and sulphur

wash, although good results have been reported from the use of some of the miscible oils.

The most troublesome insects of the year have been San Jose scale, codling moth, apple and plum curculio, apple maggot, and in a few sections the canker worms. The gypsy moth is now found in the eastern part of Providence County. Of plant diseases, those causing the greatest amount of damage are apple and pear scab, peach yellows, and brown rot of the stone fruits.

CONNECTICUT—POMOLOGICAL DISTRICT 2.

Norman S. Platt, Chairman.

In reporting on fruit prospects and conditions for Connecticut, I will begin with the statement now made very plain by facts, that the back yard trees and little orchards of our towns and villages, which have done so much towards making the home, are fast going out of existence on account of the San Jose scale. In these places the scale can, yet in most instances will not, be controlled, and the trees succumb to it,—peach and plum first, then pear, cherry and even full grown, well nourished apple trees. We have had the scale widely scattered among us for ten years, and pretty abundant for four or five. It is telling disastrously on all uncared-for stock, and will drive the production of tree fruits into the hands of specialists as nothing else could. I can see this season portions of apple trees dying where the spray did not reach. It probably means that in ordinary cases an annual spraying is necessary. I do not see why the same conditions that exist here now will not prevail in other districts as soon as the scale becomes abundant in them. But bad as it is, the scale has not proved an unmixed evil. The treatment for it of lime-and-sulphur practically disposes of leaf curl and scab of peaches, and the psylla of pears, for the two latter of which, until this came, we had no remedy.

Our apple trees have been afflicted this spring of 1907 with green and brown aphid, which badly curled the leaves and young growth. Some conditions no doubt have favored the development of these pests. We do not expect, from past experience, that they will be abundant next year. The attack will no doubt affect the yield somewhat, but as there was a promise of a very full crop we think there will be an abundance left.

At the Jamestown Exposition, Connecticut was able to place on the tables for opening day, April 26, a good supply of fresh fruit from cold storage, with the expectation of keeping up the supply for the season. Our leading winter varieties are still Baldwin and Rhode Island *Green-*

ing; next to these in number of trees planted during recent years will come the McIntosh *Red*, which grows here to be of good size, free from blemish, and of good shape and solid color. We have young apple orchards of large area coming on, and shall soon look to them to be producing in place of the large trees in our old orchards.

Our State Board of Agriculture is doing a good work in an intelligent and systematic effort to exterminate the one infestation of gypsy moth that was found about a year ago. The work promises to be successful. The peach orchard men who are willing to stand up against the scale are enlarging their orchards, while the trees belonging to the half-hearted ones quickly go down and out. The peach area as a whole is probably enlarging. Trees are in good shape as regards winter injury, but blossom buds were destroyed so much that this season's crop will be very light.

Our three leading fruits, and they are likely to remain so, are strawberries, peaches and apples. These are the favorites of the consumer as well as the grower. We have cheap land and good climate for them all, and markets near at hand.

ONTARIO—POMOLOGICAL DISTRICT 2.

H. L. Hutt, Chairman.

There are many evidences of the steady progress in the development of the fruit industry in Ontario during the past two years.

CO-OPERATIVE ORGANIZATIONS.—Probably one of the most marked of these evidences has been the rapid organization of co-operative associations for the handling and marketing of fruit. There is a Provincial organization which aims at the development of markets and establishing of a uniform method of packing and grading by the various local organizations. And already there are about fifty of these local organizations, most of which have been formed during the past two years. The results obtained by co-operative methods have given apple growers the assurance that by working unitedly they may realize nearly double the returns from their apple crop that they did under the old method of selling independently.

MARKETS.—While in the past most of the fruit exported from the Province has been sent to the Old Country markets, growers are beginning to realize that with the rapid filling up of the Canadian North-western provinces, where fruit can never be grown except to a very limited extent, in that great country may be found one of the very best markets, and a strong effort is being made to establish in this market a reputation for properly packed Ontario fruits.

FRUIT EXPERIMENT STATIONS.—One of the factors which has naturally aided in placing the fruit industry in Ontario on a better basis was the establishment by the government ten years ago of fourteen fruit experiment stations. The object of these stations was to ascertain just what varieties of fruit were best adapted to the various parts of the Province. Their reports after ten years' testing are condensed into a small bulletin (Bulletin 147 of the Ontario Department of Agriculture), which gives lists of varieties of the different kinds of fruits recommended for planting in various districts of Ontario.

VARIETIES.—The following is a general list of the most valuable varieties of apples for market as recommended by the various experimenters:

SUMMER.

ASTRACHAN—Adapted to all sections except the extreme north.

OLDENBURG (DUCHESS)—Adapted to all sections.

FALL.

GRAVENSTEIN—Adapted to all sections except the St. Lawrence River and other northerly portions of the Province.

WEALTHY—Particularly valuable for northern sections.

ALEXANDER—Especially for northern districts.

MCINTOSH—Adapted especially to the St. Lawrence River district, but can be grown over a much wider area.

FAMEUSE—Adapted especially to the St. Lawrence River district, but succeeds well over a much wider area.

BLENHEIM—Adapted to all sections except the St. Lawrence River district and other northerly portions of the Province.

WINTER.

KING—Adapted only to the best apple sections, and succeeds best when top grafted on hardy stocks.

HUBBARDSTON—Adapted to the best apple sections.

RHODE ISLAND GREENING—Adapted to the best apple sections.

BALDWIN—Succeeds best on clay land, and is adapted to the best apple districts.

NORTHERN SPY—Adapted to the best apple districts, but can be grown with success farther north by top-grafting on hardy stocks. This is also a good method of bringing it into early bearing.

ONTARIO—An early and abundant bearer, but short lived. Recommended as a filler among long lived trees. Adapted to same districts as Northern Spy, which it somewhat resembles.

STARK—Adapted to best apple districts.

VARIETIES ESPECIALLY ADAPTED TO HOME USE.

SUMMER.

TRANSPARENT—Adapted to all sections.

PRIMATE—Adapted to best apple sections.

SWEET BOUGH—Adapted to best apple sections.

OLDENBURG (DUCHESS)—Adapted to all sections.

FALL.

CHENANGO—Adapted to best apple sections.

GRAVENSTEIN—Adapted to best apple sections.

WEALTHY—Especially adapted to northern sections.

MCINTOSH—Especially adapted to northern sections.

FAMEUSE—Especially adapted to northern sections.

BLLENHEIM—Adapted to best apple sections.

WINTER.

KING—Adapted to best apple sections. Should be top grafted.

WAGENER—Adapted to best apple sections.

SWAYZIE—Adapted to all sections except most northerly.

RHODE ISLAND GREENING—Adapted to best apple districts.

TOLMAN—Adapted to best apple districts.

NORTHERN SPY—Adapted to best apple districts, but will succeed farther north if top grafted.

MANN—Adapted to best apple districts, but will succeed farther north if top grafted.

Similar lists are given for all of the other fruits, large and small, grown in the Province.

CO-OPERATIVE TESTING—The distribution of plants for the co-operative testing of fruits by the Horticultural Department of the Ontario Agricultural College has done much to introduce fruit growing on the farms generally in many sections of the Province where little or no attention had been given to fruit growing. Small lots of plants of the leading varieties of all the different kinds of fruits are sent to anyone who will agree to follow directions and report results at the end of each season. Over 6,000 experimenters are engaged in this work. The last Dominion Fruit Crop Report in referring to this co-operative

work states that it has had a marked effect in encouraging fruit growing and creating a demand for fruit.

EXPERIMENT STATION FOR TENDER FRUITS—Most of the tender fruits grown in Ontario are confined to the southern part of the Province, and as both the Provincial and the Dominion experiment stations are situated too far north to carry on experimental work with these, the southern growers have felt for years the necessity of an experiment station in their own district where experiments could be conducted which would be of more direct benefit to them. To meet this need a new station has been established in the centre of the Niagara District, where the tender fruits are most grown. This station comprises about ninety acres of good fruit land, and work is now in progress in preparing for planting out orchards and fruit plantations where experiments may be conducted which will be of value to the southern growers.

INSECTS AND DISEASES—There has been no special outbreak of insect pests during the past two years, although growers in the southern districts are having a hard fight against the San Jose scale. But it is evident that systematic and careful spraying with the lime-sulphur mixture will not only hold this in check, but enable growers to produce a cleaner and better grade of fruit than they had previously grown. The oyster-shell bark-louse increased last year at an alarming rate, particularly in the large orchards along the northern shores of Lake Ontario. Growers in that district this year are putting up a strong fight against it with the lime and lime-sulphur wash. The most serious disease has been the fire blight affecting apples, pears, and quinces. The grape rot has made its appearance in the large vineyards in southern Ontario, and the growers are finding out that the grapes too will have to be sprayed to insure a crop.

NURSERY INSPECTION—The Provincial government has for some years past been making a careful inspection of the various nurseries in the Province, and all nursery stock must be fumigated before being sent out from the nursery. This has no doubt helped largely in keeping the San Jose scale confined to those districts where it first made its appearance in the Province. The Provincial Government is also encouraging the use of power sprayers among the fruit growers by granting a small bonus to every one who purchases and uses a power sprayer upon at least twenty-five acres of orchard.

TRANSPORTATION.—The Federal Government has been assisting fruit growers in providing refrigeration in both railroad and steamboat service, and an act was passed at the last session of parliament offering assistance in the erection of cold storage houses for the holding of fruit for shipment. On the whole, it might be said that great progress has

been made by Ontario fruit growers during the past two years, and it is doubtful if there is a province in the Dominion or a state in the Union where fruit growers are better organized than in the Province of Ontario.

NEW JERSEY—POMOLOGICAL DISTRICT 3.

Byron D. Halsted, Chairman.

In a general way it is safely reported that the fruit industry of New Jersey is advancing. This is evidenced in the improvement in methods along nearly all lines, as tillage, fertilizing, thinning, spraying, etc.

It is with much gratification noted that "Fruit Growing and Market Gardening" is the title of one of the courses given in the so-styled "Short Courses" at the state college. This course of twelve weeks was well attended last winter, and a larger class is expected for the second season; the influence cannot but be beneficial to the fruit industry. Certain bulletins of a specially opportune nature have been issued by the Experiment Station, which are helping to place the fruit growing of the state upon a more rational and permanent basis.

During the present season, the fruit crop is light and as a consequence the prices will be high; this will help to make the more thoughtful take a deeper interest in the production of fruit along the most approved lines.

The cherry crop was practically a failure, due in large part to prolonged rains at the time of blooming. Plums are, also, scarce, and peaches are a light crop. There are several diseases that have made serious inroads with the peach industry, and the more wide-awake growers are aware that great care and close attention to duties are needed to increase the expectation of a good crop.

The matter of cold storage has developed of late, and some large growers are doing a handsome business in shipping daily a fine quality of fruit to the best markets. Apples and pears are thus placed upon the market and in a most acceptable condition, after but a few hours transit from the cold vault. The cranberry growers, through a highly developed organization, are able to keep Newport and Philadelphia markets supplied with fresh fruit, without at any time permitting a fall in prices due to an over supply at any one time.

The State Horticultural Society held a summer orchard meeting, which is something more than usual, and a sign of additional life in an old, strong organization among Jersey fruit growers.

In conclusion it may be stated in short that, while it is an "off year" for New Jersey fruit crops, there is evidence that pomology is upon the

upgrade, and it only needs the favorable conditions for this state to break its record for fine fruit with large profits.

DISTRICT OF COLUMBIA—POMOLOGICAL DISTRICT 3.

W. N. Irwin, Chairman.

Fruit conditions in the District of Columbia show no improvement since my report of 1905. In fact the outlook, particularly as to tree fruits, is most discouraging. Blight, borers, fungus diseases and San Jose scale have damaged the trees to such an extent that it is a question whether they are worth the effort necessary to revive them. Another cause for not planting tree fruits is the steady advance in the value of land, and the probability of its being needed for subdivision and improvement.

Berries receive more attention, the growers, however, depending on nature and old-time cultural methods, produce too much low grade fruit for profit to themselves or satisfaction to the consumers. A severe drought in May, 1906, reduced the berry crop at least one third, and the small size and poor quality of the fruit had its effect on the price, causing a direct loss to the growers in this vicinity of probably \$15,000, or enough to install several up-to-date irrigating plants. With intensive culture and facilities for irrigating, when needed, fancy and high grade berries could be produced here that would be very profitable to the grower. The wholesale value of small fruits consumed in Washington City and its suburbs during the local small fruit season is undoubtedly above \$100,000 per annum. The twelfth census, which covered the crop year of 1899, showed total values of blackberries, currants, gooseberries, raspberries and strawberries in the four adjacent counties of Maryland and Virginia as follows:

Montgomery County, Maryland	\$22,956.00
Prince George County, Maryland	52,173.00
Alexandria County, Virginia	15,702.00
Fairfax County, Virginia	24,171.00
	<hr/>
	\$115,002.00

As practically all of the small fruits grown in these four counties are hauled by wagon to this market, the above estimate is considered very conservative, especially in view of the fact that the population of the District of Columbia has increased from 278,718 in 1900 to over 300,000 in 1907.

No improvement has been noticed in methods of gathering, grad-

ing and marketing of fruits. There are no associations or organizations of fruit growers in the District.

Our rapid increase of population, now over the 300,000 mark, makes this an excellent market for all food products, particularly so for bulky and perishable fruits and vegetables. Many excellent varieties succeed well in this locality, and when brought to market in perfect condition bring remunerative prices. The list of varieties submitted in my 1905 report would, if grown in sufficient quantity, aid materially in supplying the constant demand existing here for better fruits.

The prevailing method of buying fruit in this market is in small quantities, viz., one-quarter peck, one-half peck or peck. Rarely do we find a first class apple for less than 15 cents per one-quarter peck, or 50 cents per peck; peaches and pears, two, three, or four for 10 cents. Red raspberries have sold this season from 60 cents per quart down to 20 cents per quart, the bulk of the crop selling at 20 cents. Blackberries, wild, sell for 8 to 10 cents per quart; Eldorado, Early Harvest and other cultivated varieties sell for 12½ to 15 cents per quart. Black raspberries and currants sell at about the same price as cultivated blackberries.

Insect pests can with intelligent care be successfully controlled. Fungus diseases, blight, etc., are more difficult problems, and in unfavorable seasons cause considerable loss. There are no inspection laws concerning nursery stock or orchards in the District.

Large quantities of fruits are held in cold storage here for the use of our markets.

PENNSYLVANIA—POMOLOGICAL DISTRICTS 2, 3 AND 4.

George C. Butz, Chairman, assisted by A. I. Loop, E. B. Engle,
Gabriel Heister and W. T. Creasy.

The State of Pennsylvania has awakened to the fact that very excellent fruit may be grown within its borders, and certain sections are already noted for the extensive areas devoted to particular fruits, and the quality of the article marketed.

Erie County lying adjacent to the lake of that name has within the past twenty years greatly increased its acreage in fruit of all kinds. The grape, however, is so far in the lead that the increased plantings of plums, cherries, currants, gooseberries, raspberries, strawberries, etc., amounting to hundreds of acres, are largely lost sight of. There are now grown in this county, more particularly in the small strip of the county lying next to the lake, upwards of 8,000 acres of vines. The new plantings in recent years amount to ten or fifteen per cent annually. Vines planted from thirty to fifty years ago are yet in good condition. Notwithstanding

the great extension of the planting, there has been a steady increase in the price of fruit from the low point of 1896 to the present time, and indications are that it may be expected to hold at this high point for some time to come. The superior facilities and skill in handling the crop after it leaves the grower's hands are largely responsible for the excellent prices obtained for this fruit.

The peach, while holding its former prominence in the South Mountain region of the state, has been more extensively planted in the southeastern counties and through the mountainous sections.

The apple has claimed more attention over the state generally than any other fruit, and the noteworthy characteristic of the horticultural outlook in Pennsylvania is the tendency of all fruit growers to plant commercial orchards, especially of apples, and to conduct their enterprises upon a comprehensive scale. This fact is strongly demonstrated in the orchards of Adams, Franklin, York, Cumberland and Bedford Counties in southern Pennsylvania. These counties especially have proven their adaptability to fruit culture, and many large plantings of apples and peaches have been made. Enterprising planters have organized societies in several counties, and the county of Adams has one of the best organized of its kind in this or any other state. At the meetings of the latter society the question of varieties, soil, location, cultivation, packing, shipping, marketing, and control of injurious insects and diseases are all practically considered and discussed, and their annual exhibits are the wonder and admiration of fruit growers and dealers. Other counties have younger organizations, and similar interests are awakening in their localities. Already their fruits have achieved a reputation for size, color, quality and attractiveness and are in demand wherever known. A marked advantage of such organizations is the co-operative feature, which enables shippers to obtain favorable rates for their products, and through these organizations crates and other fruit packages can be more advantageously purchased. Fertilizers, machinery and spray materials can also be procured at special rates through this organization, and through the same co-operation uniformity in grading and packing is being secured that will soon establish a reputation that will command attention.

The discussion that has been carried on during the last few years in the trade journals, agricultural press and horticultural associations on the subject of grading and packing of fruit has resulted in more careful grading and more honest packing in Pennsylvania, but uniform grading and packing is out of the question, as most of our fruit is sold in the local markets, and each city seems to have its own style of packing and

its own system of grading. The straight three-bushel barrel and the one-half bushel basket are the packages most generally used.

The grape growers have had their shipping associations for a number of years, and the business is done on the same lines as it was ten or fifteen years ago, but the officers have better facilities for obtaining prompt information of the markets and the requirements of their dealers than formerly. There are fifty or more shippers in the Chautauqua-Erie grape belt, which extends from Harbor Creek, Pennsylvania, to Silver Creek, New York. The shippers are of three classes:

(1) Independents—Individuals or companies which make a business of shipping and selling for the growers.

(2) Unions—Organizations of a large number of growers for the purpose of shipping and selling for their own members.

(3) Buyers.

The first class pool sales for each day or certain number of days, and return to the grower the net price obtained for the fruit less one-half cent per eight-pound basket and \$1.00 per ton in bulk. The second class pool and return as above, and at the end of the season return to the grower his share of any profit that may have been made in handling the grapes at one-half cent per basket and \$1.00 per ton in bulk. The third class pay cash on delivery every day and take their own chance of profit and loss. All classes find it to their interest to work in harmony, the result being that the grower can if he likes take spot cash for each load of his grapes, and feel sure that he is getting about all that there is in it. A general union, attempting to embrace all the growers in the belt, has been tried. One year this organization shipped 4,444 car loads, but it was abandoned because it was found to be impracticable to handle such a large quantity of fruit satisfactorily. From fifty to five hundred car loads seem to be about as many as one individual or organization can handle with best results. Consignment used to be the rule, but now practically everything is sold on the track. A few years ago the appearance of hot weather meant disaster to the fruit, but now every shipper has prepared to ice each car as needed. The treatment, with re-icing along the road, insures good condition of fruit upon its arrival at its destination.

Another factor in keeping up the price of grapes is what is known as "bulk shipments." This stock is the run of the vineyard, packed directly from the vines into square shallow crates of about thirty pounds capacity. These are drawn direct to shipping points and loaded into cars in quantities of from ten to fifteen tons each. The quantity of fruit shipped in this manner is sometimes very large, running all the way from ten to one hundred cars daily. This fruit is used for wine and unfermented

grape juice. The crates are of such shape that good ventilation is secured, insuring the arrival of this stock in good condition. The first bulk shipments were made from North East, Pennsylvania, in 1896, by T. L. Turney. The crate is now a very popular package for marketing grapes, often netting the grower more than basket stock. The Independents and Unions are now pretty generally in the package business in such a way that they provide the grower who will ship with them the baskets or crates required at the lowest market price.

VARIETIES—The leading commercial variety of apples in Pennsylvania is the York Imperial. In recent years it has doubtless given greater satisfaction than any other variety. Some of these apples have been shipped to Minnesota, where they were much appreciated, as they stood the journey better and arrived in better condition than apples from nearer points, because of their firmer substance. They have been received in English markets in a most excellent condition, and on this account gave the dealers great satisfaction. Ben Davis promises to be equally productive and profitable in southern Pennsylvania. It is as good a keeper as the York Imperial, but is inferior in quality. At present Stayman *Winesap* is in popular favor, and is being very largely planted in southeastern Pennsylvania. Jonathan is also being planted extensively in the South Mountain district, and the young bearing trees are producing some fine specimens, but fears are entertained that as the trees grow older the fruit will decrease in size. Rome *Beauty*, Grimes *Golden*, York *Stripe*, Baldwin and Northern *Spy* are also being planted, but it may be safely said that the York Imperial, Ben Davis and Stayman are in the lead in all plantings for commercial purposes.

Among the peaches general favorites are the Elberta, Late Crawford, Smock, Champion, Oldmixon, Stump, Ward Late, Globe, Carman, Mountain Rose, Belle of Georgia and Stevens Rareripe, the Elberta being the leading variety in nearly all sections.

Plums are not extensively grown in Pennsylvania, but where they are planted the choice in recent years has been wavering between the European and Japanese varieties. Of the former German Prune, Lombard, Imperial Gage, and Damson are preferred; while Burbank, Abundance and Wickson are the Japanese varieties giving best returns.

Among the pears, Seckel, Keiffer, Clapp Favorite, Bartlett, Angouleme and Lawrence are the most profitable.

In the commercial vineyards the principal acreage is Concord, with a small acreage of Niagara, Delaware and Catawba.

INJURIOUS INSECTS AND DISEASES.

Under the leadership of the San Jose scale the enemies of fruit culture are pressing the small growers to the wall, and creating a field

for the wide awake energetic pomologist to exercise his skill and to win the profits of this pleasant occupation. The farm orchard and the amateur fruit garden are rapidly disappearing because of the indifference of the owners to the destructive work of the insect pests and fungous diseases. Persons having but few trees are too slow to take up the approved methods of spraying, and will not even help themselves or their neighbors by destroying the worthless infested trees. Those who have tried spraying with indifferent success, using perhaps questionable remedies, or applying them improperly or carelessly, condemn spraying absolutely and leave the infested tree to its fate. Only those who have proper outfits for the work, who will devote the proper amount of time and apply materials properly prepared, and who have sufficient interest at stake, realize the true importance of the warfare against insects and diseases, and are disposed to devote sufficient time to it. In consequence of this the fruit industries are falling into the hands of specialists and commercial growers, who, seeing the prospects for success and profit, will in all probability realize handsomely in the future.

NURSERY AND ORCHARD INSPECTION.

In addition to the work of nursery inspection which was initiated in this state in 1901, the work of inspecting orchards and private premises was provided for in 1905 by a special appropriation from the state of \$30,000 per year for nursery and orchard inspection. This amount was increased by the Legislature in 1907 to \$40,000 per year. A thorough system of orchard inspection by counties has been instituted by the State Economic Zoologist, and practical demonstrations are given at stated times and places for the purpose of interesting and instructing our citizens in the control of San Jose scale and other orchard pests. Our nurseries are visited and inspected at least once a year, and all possible efforts are being made to prevent the dissemination of injurious insects and diseases. Where San Jose scale has been discovered in nurseries, they are required to fumigate the stock subject to the attacks of the scale, before shipment.

The U. S. Department of Agriculture has several experts at work in different parts of the state studying the habits of and testing the best remedies for various insects and fungous diseases.

COLD STORAGE.

As already indicated, cold storage conditions are being provided for the transportation of grapes, and to a slight extent for some other fruits, but since the bulk of Pennsylvania fruit other than grapes is sold in nearby markets, there is little occasion for much cold stor-

age. When the large orchards now planted come into full bearing, the problem of storage houses will be more vital to the interests of the fruit growers, and cold storage houses will no doubt be erected in course of time.

WEST VIRGINIA—POMOLOGICAL DISTRICT 4.

C. M. Davidson, Chairman.

Fruit growers in this state are beginning to realize the importance of up-to-date methods in gathering, handling and packing fruit. The old plan of "hand picking with a club" is now very seldom practiced. Uniformity in grading, and attractive and uniform *full measure* packages are now used by the leading fruit growers.

West Virginia as a whole is not a fruit state, but there are three distinct fruit belts. One in the northwestern part of the state borders on the Ohio River and is known as the Ohio River district. The second district is located in the northeastern part of the state, known as the Northern Panhandle. It is a little arm four counties long and one county wide, also bordering on the Ohio River. The third district bordering on the Potomac River, in the southeastern part of the state, is six counties long and one county wide, and is known as the Eastern Panhandle. This district is the oldest and most important in the state. Within these three belts fully ninety per cent of the fruit is grown.

Each of these belts has its leading varieties of apples. In the Eastern Panhandle the leading varieties are York Imperial, Grimes Golden, Ben Davis, Nero, Northwestern *Greening*, and New York *Pippin*. In the Northern Panhandle, the Rome *Beauty*, Willowtwig, Ben Davis, Grimes *Golden*, Newtown *Pippin* and Russet. In the Ohio River district, Rome *Beauty*, Grimes *Golden*, and Ben Davis are the leading varieties. In the Ohio River district of late years the early varieties, such as Wealthy and Yellow Transparent, are bringing the best returns.

West Virginia being a mineral and lumber state, not only consumes much of her fruit, but also imports a great many cars of apples and other fruits. The local markets are developing and taking fruit at good prices. In Huntington, W. Va., Yellow Transparent and such apples are being sold at wholesale at one dollar per scant half bushel basket, or at the rate of seven dollars per barrel.

Not much progress has been made in orchard and nursery inspection. Few cold storage houses are in existence. The orchard lands of the state are generally in high altitudes, and the fruit is of high

color and of fine keeping qualities. West Virginia for years was known as a coal and timber state, but the display of fruits at the Saint Louis Exposition showed what the state could do, and no doubt the Jamestown exhibit will show greater improvement, although it is an off year.

LOUISIANA—POMOLOGICAL DISTRICTS 6 AND 7.

F. H. Burnette, Chairman, assisted by E. J. Watson, R. S. Moore,
C. D. Otis, B. M. Young and W. S. Keaghey.

The state may for convenience be divided into three general districts: the orange section below New Orleans, the strawberry section in the eastern part of the state, and the peach, fig, pear and apple section in the Western and Northern parts of the state.

There are approximately 400,000 orange trees planted in Louisiana, with a 1907 crop outlook of nearly 200,000 boxes. The varieties grown are the Louisiana Sweet, Washington Navel, and Satsuma. Mandarins, tangerines, and grape fruits are also grown. Usual methods of cultivation are employed in the orange orchards, and high grade fertilizers as well as ground bone are used. A common practice is to sow cowpeas in May, and later cut for hay, the roots enriching the soil, and danger of late growth of the orchard being prevented by cutting. Louisiana oranges are now sorted and packed by the most modern methods, and are known to carry as well as oranges grown in any other section of the country. Scale insects have been very prevalent, but are now being controlled by "fungus" treatment, with a promise of practically a full control. The greatest source of danger is the little foreign ant recently introduced into Louisiana, and unless some remedy is found, the orange industry will suffer great injury.

The strawberry industry along the Illinois Central Railway is increasing, and continues to be prosperous. Solid train loads of berries are sent out daily in the midst of the berry season. The Klondyke (Louisiana) is practically the only variety grown in the commercial district. The following is a list of fruits for Louisiana, generally found to be most reliable:

APPLES.

Red June
Early Harvest
Rhodes Orange
Horse

May Pippin
Red Astrachan
Cullasago
Watson

The McMullen apple, recently found in De Soto Parish, promises to be very valuable for Louisiana. It is thought to be a distinct variety, and is full of merit.

PEARS.

Smith	Keiffer
Le Conte	Japan Russet
Garber	

PEACHES.

Elberta	Greensboro
Triumph	Miss Lolo
Mamie Ross	Belle of Georgia
Thurber	Early Rivers
Berencie	General Lee
Greensboro	Chinese Cling
Yazoo Cling	Sneed

PLUMS.

Burbank	Milton
Abundance	Wild Goose
Robinson	Miner
Poole's Pride	Red June

FIGS.

Celeste	Reine Blanche
Lemon	Mission
White Ischia	Brunswick
Wonderful	New French

PERSIMMONS.

Besides the native, which grows to perfection, there are the following:

Hyakume	Yemon
Nero Zami	Tsuru
Myotan	Yeddo Ichi

GRAPES.

The Scuppernongs do well, and the recent hybrids brought out by T. V. Munson are very promising, also the following:

Diamond	Ives
Champion	Catawba
Brighton	Agawam
Niagara	Moore Early
Dracut Amber	

STRAWBERRIES.

Brandywine	Eclipse
Klondyke	Aroma
Lady Thompson	Haviland
Cloud	Hoffman
Michel Early	

BLACKBERRIES.

Dallas	Wilson
Erie	Robinson

DEWBERRIES.

Manatee	Austin	Chestnut
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PECANS.

More attention has been given to the planting of pecans than ever before. Louisiana is known as the home of the large thin-shelled varieties, and her alluvial lands grow them to perfection. Several hundred thousand trees have been planted in the last three years, and many new pecan orchards are being planned. Some of these orchards will contain as high as 2,000 acres. The leading varieties grown are:

Stuart	Success
Frotscher	Young
Van Deman	Georgia
Pabst	Nelson
Moneymaker	

New varieties are being brought out every year. No serious enemy has appeared, and the future of the pecan industry in Louisiana is extremely promising.

KANSAS—POMOLOGICAL DISTRICTS 8 AND 10.

F. W. Dixon, Chairman, assisted by W. R. Martin.

Because of the unfavorable weather conditions prevailing during the spring of 1907 my report must necessarily be short. During the latter part of March there were a number of days in which the thermometer reached ninety and even ninety-four degrees above zero. Trees and plants were all in the best condition and gave promise of an immense crop. This unusual warm weather brought them on very rapidly, and fruit trees of all kinds were in bloom early and had set full of fruit. On the 14th of April the thermometer went as low as twenty-two above zero. It hardly seemed possible that any fruit could escape. A few days later

on examining our orchards we found the fruit was practically uninjured. Weather conditions were favorable until the 11th day of May. Another cold wave struck us and the thermometer again went as low at twenty-four above zero. This seemed to be "the straw that broke the camel's back," for almost all of the fruit was killed at this time. Most orchardists reported that fruit was almost entirely killed during the April freezes. The reason why our own fruit was not killed was because we kept heavy smudge fires going during each cold night. This has been our first experience with smudges, and we can say that we are sure they did a great deal of good. Had not the thermometer made an unheard-of record for this season of the year we are sure we should have suffered little damage. More particularly was the effect of smudging noticed on the strawberries. We had suffered no damage to speak of until the 27th of May. On that night a light frost with the thermometer at thirty-eight did more harm to our strawberries than all the freezes before, because that night we did not think of it getting cold, and the light frost did the damage. However, we had a much better crop of strawberries than general throughout this section of the country.

The methods of grading and handling fruit have not been greatly changed in this section, as we use barrels mostly in packing apples. I used boxes, however, in packing two car loads of first class fruit in 1906, and found them very satisfactory if I could get good packers. The boxes used were made too light, and I will use heavier boxes in the future in shipping. Nothing but strictly fancy apples should be packed in boxes, and only No. 1 fruit in barrels. All the cheaper grades of fruit should be utilized in some other manner. The western part of this state as yet does not produce any fruit, and we have found a ready market for No. 2 apples in bulk, fair prices being realized. Freight rates two to three hundred miles west are almost double the rate to Chicago, though the latter is more than double the distance of western Kansas points. With freight rates adjusted we would have no trouble of disposing of a fair grade of fruit, for several years at least, at a profit. I do not know of any organization for shipping fruit but one, the Wathena Fruit Growers' Association. It is the best association we know of. A temporary organization was made at Holton, known as the Jackson County Fruit Growers' Association, for the purpose of shipping peaches last season. The organization was fairly successful, and prices realized were very much better than would have been realized otherwise. A fair grade of peaches netted 50 cents per bushel. No. 1 Elberta netted growers \$1.50 per bushel.

Scarcity of fruit in different sections will bring about new markets

every season, and you never can tell where you will market your next year's crop. This season proves it.

I do not know many new varieties worthy of mention. The fact is that most of the older varieties will do better. In apples the old Ben Davis seems to be the stand-by in this section, and we believe the most profitable. Jonathan and Grimes *Golden* are best in quality, and profitable. Missouri *Pippin* crowds Ben Davis for first place quite often. Winesap is too small, and York Imperial is easily scalded in storage, though one of the best keepers by ordinary methods.

Elberta seems to be the most profitable peach in this section, though Captain Eads is hurrying it for first place. Champion is hardy in bud, but entirely too tender to ship. Of the very late varieties we believe the Bonanza to be the best. We picked fine fruit of this variety as late as November 10th, and it is very hardy. A good many specimens of it are on the trees now after all the frost. Carman is a good early variety that is very hardy. Frances has also done well for us. The reason we believe the Elberta to be the best peach is because it is a shipper, being also large and of a fine color. When we have a very large quantity in this country the only profitable variety is the one that will ship, and this particular variety is the one that will stand up under all circumstances.

Of the smaller fruits, strawberries in particular bear very profitably. Varieties that succeed best for us are Dunlap, Gandy, Warfield, Ridgeway, Excelsior and August Luther.

The only injurious insect we have here is codling moth. As the apple crop is a total failure this year we have hopes that the "critter" will starve. However, there is an apple now and then in our orchard, each of which seems to contain a whole family of codling moths. At this date we find very few remaining, and we have hopes that they will all go before spring.

I have sprayed every spring for four years and find it profitable. The only fungous disease we have is scab, and it is easily controlled by spraying with Bordeaux. We have never been troubled with any insect among the other fruit trees or plants, except anthracnose of the raspberry, for which we have as yet tried no remedy, but expect to begin operations in the spring.

There has been some progress in orchard and nursery inspection in this state. A beginning has been made, and last winter our legislature enacted a law creating a board consisting of five members for the purpose of orchard and nursery inspection. This is a step in the right direction, although the amount appropriated was very inadequate for the purposes needed. I believe that the days of the small uncared-for orchard are numbered. Orchardling is a science and requires men of great nerve to

make it a success. There are very few people who will take care of an orchard year in and year out when there is a failure of fruit. The small orchardist in particular is the one to neglect his orchard, and legislation ought to prevent him from fostering diseases to infest his neighbors' better-kept orchard.

The cold storage method of keeping apples is very profitable and can be used to keep other fruit as well. To be successful nothing but first class fruit must be placed in storage, and the fact must be emphasized that poor fruit placed in cold storage will not come out in better condition than when placed there.

In the transportation of tender fruits we find the great trouble to be the unnecessarily long time consumed by the transportation company in forwarding them. For instance, when forty-eight hours is the time that it should take a car of peaches to travel 500 miles, quite often they are from four to five days traveling three hundred miles. Sometimes the transportation company fails to ice. In that case we have always been able to get damages, but not nearly as much as they should be. The inequality of freight rates interferes considerably with getting fruits to places where needed.

W. R. Martin, business manager of the Fruit Growers' Association, Wathena, in the northeastern part of the state near the Missouri River, reports as follows:

Our methods of grading, gathering and shipping of fruit have not greatly changed; we still follow the barrel system of packing, some being done in the orchard, but most of it at the sheds under close inspection. Our association markets all of the fruit grown by its members. Where there is a union of the growers we find the results of marketing far more satisfactory, and we purchase all supplies in the name of the association.

Scarcity of fruit in localities, we find, will always bring about market changes. The Stayman is one of our best new varieties. Nothing excels the Jonathan, which is followed by the Winesap, Ben Davis, and Gano.

Our worst injurious insect is the codling moth, and we are sorry to say that very little spraying is done to check its ravages. We have no scale. Our worst fungi are the scab and bitter rot.

The cold storage method of keeping apples is very popular with us; best results were obtained last year with cold storage.

The unheard-of cold and frosts and freezes of April and May practically destroyed the crop of all tree fruits in this locality. We shall have to buy apples for home consumption.

WISCONSIN—POMOLOGICAL DISTRICT 9.

Frederick Cranefield, Chairman.

Wisconsin is not a commercial orchard state. A forty-acre orchard in Winnebago County is the largest in the state, and there are but few others approaching this size. Two or three hundred carloads of summer and fall apples are shipped annually from the southern part to the Chicago market, and smaller lots from other sections. This does not mean that we cannot raise apples, but simply that we have not got around to it. We are young yet—but little over half a century old. It took several years to clear our land of the forest growth. Then we raised wheat for a long time, and afterwards corn and hogs, and now we are busy making butter and cheese to the extent of over fifty millions of dollars a year. Presently we will raise fruit. The growing of small fruits, especially strawberries, is now well established, the Wisconsin crop supplying Wisconsin markets; and from the Sparta region many carloads are shipped west and northwest. Conditions in the southern half of Wisconsin are well adapted to the production of summer and fall apples. In the larger apple regions of Illinois and Missouri, which supply the Mississippi Valley, the early ripening varieties are but little grown. Their Oldenburg, (Duchess), McMahan and others ripen in the hottest part of the season and keep scarcely long enough to get to market. With us the Oldenburg is firmer, better colored and will keep longer than when grown farther south. In central Illinois and farther south the Wealthy is a summer apple, but with us it ripens in October, and will keep until January in cellar storage, and until May in refrigeration. It is also of good quality.

It is not for storage, however, that we will raise early apples in Wisconsin, but for immediate consumption. We are within easy reach by rail of several millions of people who really prefer juicy Oldenburg and Wealthy apples to bananas, and will buy our apples just as soon as we can get around to raise them. We have apple land—whole counties of it—and we have varieties adapted to our conditions. The adaptation of varieties to environment is a question of vital importance in fruit growing, and should receive first consideration in attacking new problems.

Wisconsin holds first place in the development of the American species of our native plum. The work done by Goff at the Experiment Station in testing varieties and in breeding has been of the greatest benefit to northwestern horticulture. Neither European nor Japanese plums can be grown successfully in Wisconsin. We leave these for our neighbor across the lake

Co-operative marketing of small fruits has received much attention during the past two years. A very successful organization has been in existence for several years at Sparta. Of the working of this association the manager says:

"The plan of our association at Sparta is absolute co-operation. Each grower belonging to the association delivers his fruit to the manager, taking a receipt therefor, and the fruit is then either sold in the open market, shipped out on standing orders to local dealers throughout the country, or consigned to some responsible commission house, as the manager in his judgment thinks best. Returns are made to the growers on each day's shipment, pro rata according to grade. By this method our manager can avoid overstocking any one market, so far as shipments from this one place are concerned. He can readily keep in touch with all the principal markets, and by a little judicious advertising can let it be known that dealers may send in their orders with an assurance that they will be promptly filled with good fresh fruit. This has enabled us to obtain a price for our produce which the individual cannot get.

"We have a further advantage in the fact that we have a man who devotes his whole time to looking up the market. He receives quotations from the different cities, and being conversant with the conditions from day to day, is enabled to profit by any change that may occur in any market to which we may be shipping. He can send daily quotations to his regular customers, and above all things keep in touch with other associations as to their probable shipments, destination, and daily price.

Co-operative marketing enables the grower to devote more of his time to getting his fruit in the best possible condition to put on the market, and invariably raises the standard of quality. This today means many dollars in his pocket, and relieves him of the arduous duty of trying to keep even with the commission man."

In 1906 this association marketed the crop from 500 acres of strawberries, giving a very material gain in returns to the members over the open market.

The cranberry growers of the state have also formed an organization which controls practically the entire crop. The secretary of the State Cranberry Growers' Association in reporting on 1906 business says:

"Through the united efforts of A. U. Chaney and the Wisconsin Cranberry Sales Company, we have secured in the name of the Wisconsin Cranberry Sales Company a reduction in railroad rates to California of \$40 on every car of 200 barrels, \$72 for every car to all Northern Pacific points, \$60 per car to Winnipeg, \$12 per car to Minneapolis and \$24 per car to Milwaukee and Chicago. This means so many dollars in the

pockets of Wisconsin growers. It also means a vast territory opened up to us in which we had never before been able to sell our Wisconsin berries. When we get low rates to Chicago it means that we get Chicago rates from there to a vast territory thickly populated and rolling in wealth, whose appetites have longed for years for a taste of Wisconsin berries, but owing to railroad rates they had to accept of eastern berries entirely. Now they have a taste of Wisconsin berries and say they like them."

A summary of the business for the year shows a net gain to the cranberry growers of \$42,000 over that of previous seasons. The Wisconsin Cranberry Sales Company has within the past year become a part of a national organization which controls practically the entire cranberry crop in the United States. This led to considerable comment in the daily press, accusing the cranberry men of trust methods. In this connection the president of the national organization says in a recent communication to a leading agricultural paper:

"It is not the object of the exchange to simply hold up the price of the cranberries, but to create such a demand for the fruit that growers can with very little risk very materially increase their acreage and output. There is ample room to increase the cranberry output to 2,000,000 barrels annually in the next few years, providing sufficient consumptive demand is created to take care of this supply when it is produced."

This sounds all right, and if this national co-operative movement tends to give the growers a fairer return for their crops without unduly increasing prices to consumers, it will mark an epoch in the marketing of fruits.

Horticultural uplift in Wisconsin receives inspiration from two sources, the Horticultural Department of the State University, and the State Horticultural Society. The breeding of plants, study of plant diseases and similar work engages the attention of the University Department, while the Horticultural Society has established and maintains six trial orchards or experiment stations in northern Wisconsin for the purpose of testing varieties of tree fruits in this region. The orchards consist of from three to twelve acres each on lands leased by the society for twenty years for cash rental, and the planting and care is vested absolutely in the society. The most northern of these orchards is but seven miles from Lake Superior. The orchards are all located in the cut-over timber region and north of the generally accepted limits for tree fruit growing. Multitudes of settlers are now clearing farms here and will soon be ready for fruit growing. The Horticultural Society is

doing the pioneer work for them in selecting by trial the varieties adapted to this somewhat rigorous climate.

The State Horticultural Society has also put forth a theory, and will attempt to prove it, viz., that as much money may be made in tree fruit growing in Wisconsin as in any other state. Certainly this will not be done in attempting to raise similar varieties, but in planting the varieties adapted to our environment. Following this idea orchards of five to ten acres each are being established by the society in the sections best adapted to commercial apple orcharding, to be conducted as demonstration centers where most approved methods of culture, spraying, etc., will be applied. In addition neglected orchards are being leased and renovated.

The inspection of nurseries is vested by state law in the Agricultural Experiment Station and executed by the Department of Horticulture.

IOWA—POMOLOGICAL DISTRICTS 8 AND 9

Wesley Greene, Chairman

A summary of the reports received from fruit growers throughout the state during July will give a better idea of the fruit crop than any description I could write of it:

Summer apples, 31 per cent of a full crop; fall apples, 32 per cent; winter apples, 32 per cent; pears, 8 per cent; cherries, 7 per cent; American plums, 17 per cent; Japanese plums, 5 per cent; European plums, 12 per cent; peaches, 24 per cent; grapes, 78 per cent; red raspberries, 60 per cent; black raspberries, 72 per cent; blackberries, 84 per cent; currants, 38 per cent; gooseberries, 46 per cent; strawberries, 71 per cent.

Extremely warm weather in March followed by frosts in April and May killed most of the blossoms on the fruit trees in the southern part of the state, where the crop of apples, peaches, pears and cherries was very small. The small fruits we had in quantity were strawberries, raspberries and blackberries. Grapes promise to give a good crop. Scarcity of other fruits made a good demand for those that were plentiful, and at remunerative prices. The marketing of fruit this season was quite different from a year ago, when the question was, where can I find a market for my surplus fruit? This year the crop was sold to the local trade, and picking, grading and packing did not receive the same careful attention as when the market is overstocked with fruit. Thousands of dollars are lost annually through careless picking, grading and packing of the crop. This phase of fruit culture should receive more attention, for it is the key to successful marketing of the products of the orchard and vineyard.

The leading commercial varieties in the state are:

Apples—Oldenburg, (*Duchess*), Wealthy, Grimes, Winesap, Jonathan and Ben Davis.

Cherries—Early Richmond and Montmorency.

Plums—Americana varieties: DeSoto, Forest Garden and Wyant.

Grapes—Moore Early and Concord.

Strawberries—Dunlap and Warfield.

Cool weather in the early part of the season prevented germination and growth of apple scab, and the fruit is nearly free from the disease in many localities. Insects are also less abundant, possibly from the same cause.

Practical orchardists are inclined to reduce the strength of copper sulphate recommended in spraying mixtures by the Stations. Since the introduction of power spraying machinery a greater quantity of Bordeaux is applied than when the hand pump was used. It is the belief of some growers that a thorough application of the Bordeaux with a less amount of copper sulphate will give as good results, with less injury to the fruit and foliage.

The use of cold storage for keeping fruit is on the increase. At present the capacity of these plants is not equal to the demand for room when there is a good crop of fruit.

Within the last year I have noticed considerable abuse of the method of handling fruit from cold storage and iced cars by opening the packages and exposing the contents, while still at a low temperature, to warm air. Fruit treated in this manner will soon go down, and much of it will be lost in the hands of the retail merchant or consumer. There is need of more information on the method of handling fruit by the "Arctic Route"—out as well as in.

OKLAHOMA—POMOLOGICAL DISTRICTS 4 AND 10.

H. H. Cummins, Chairman.

Most fruit in Oklahoma is gathered in bushel baskets, and as trees are young and low headed the greater portion can be reached from the ground. Most fruit marketed this season will be fairly well graded and packed. Growers are not as well organized yet as could be desired, though there have been several county organizations formed; and a general state organization is now on a sound basis, which looks to the actual placing of all fruit handled through it. Apples mostly go to the West and Southwest, to regions not generally adapted to fruit growing. Prices are usually better there, and the haul is shorter. Peaches, however, have to go north and east to reach the large markets. Owing to the

firmness and superior quality of Oklahoma peaches they have been successfully and profitably shipped to England. In peaches Elberta still easily holds first place, although all the newer varieties are being tried, and some may prove better.

Owing to cold storage the Jonathan apple is probably now considerably in the lead, and it seems to be specially adapted to our soil and climate. Ben Davis, Winesap, Missouri *Pippin*, Rome *Beauty* and York Imperial are also quite well represented. Arkansas *Black* is fine here. Fall apples are largely of the varieties Maiden Blush and Shackelford; of summer varieties, Yellow Transparent, Cooper, White and Oldenburg (*Duchess*) seem to do best. Some of the newer sorts, such as King David, Oliver (*Senator*), Black, Ben Davis and Beach (*Apple of Commerce*) are being tried, and seem to promise well.

In plums, the native and Japanese seem best. Some of the crosses of the above are especially promising. Burbank is probably the best of the Japanese; Wild Goose and Arkansas Lombard of the Americanas; and Gonzales, Gold, America and McCartney of the crosses, are some of the best.

Oklahoma is the home of the pear, which seems destined to lead all other fruits here. The Keiffer is the Elberta of pears, and easily takes first place, although many others are doing well. It is not uncommon to see a Keiffer tree eight or ten years old with ten to twelve bushels of fruit. All pears for Oklahoma should be propagated as standards.

Cherries have not been very extensively planted, mainly I think from the fact that the common Morello does not seem to do well here, and for a number of years budded trees have been very high. The Mahaleb makes a remarkable growth here and seems the best stock to propagate on. Varieties most in use are Early Richmond and Montmorency.

Grapes of almost all varieties succeed remarkably well here; even some of the *Viniferas* are doing well. Concord, however, is still the people's grape. Many of the finer sorts are being cultivated. For first early the Headlight seems destined to fill the bill. It is of fine quality, a good keeper, and hardy and productive.

Within the last few years blackberries have received considerable attention and have proved quite profitable. Early Harvest, although not the finest fruit, is best adapted to Oklahoma conditions. In favored localities many of the finer sorts are grown. Dewberries are receiving some attention, and some of the newer sorts seem promising. Raspberries have not generally been profitable, as they do not withstand drouth well. The present season has been a good one for strawberries, and the acreage will be considerably increased. Varieties of the straw-

berry differ so much in different localities and soils that it is hard to say which is best, but generally speaking the southern varieties are best. The native or Crandall currant succeeds all over Oklahoma, on all kinds of soil and under all climatic conditions. Every year is a good one with it. Drouth, neglect, heat and frost assail it, but still it is loaded with fine fruit. The red and white varieties are not a success here.

There are many other kinds of fruit being tried in a small way, such as almonds, figs, English and Japanese walnuts, etc. Just how these will do we are not able to determine at this time. Oklahoma is making wonderful strides in fruit growing. Think of a territory fourteen years old, not yet admitted to statehood, standing eighth in the production of grapes! Think of states more than 200 years older passed in the race—Virginia is nearly 300 years older! There is an organization now formed to plant the largest apple orchard in the United States in Oklahoma, which will comprise more than two thousand acres. There are thousands of acres of the finest pear land in the United States that have never had a plow stuck in them yet.

The most troublesome insect in Oklahoma is the curculio, which is native here on our sand plums and cherries, and as there has never been anything done to check it, it is now quite abundant, and will require skill and perseverance to control. However, the pear seems practically immune. Many good spraying outfits are being purchased, and a systematic fight is being prepared for 1908. In some localities peach rot has developed to some extent. The leaf-roller and leaf-hopper are with us on the grape, but have done little damage. In one or two small sections Chinese scale has developed, but our energetic Secretary of Agriculture is making a vigorous effort to stamp it out by burning up infested trees. We have a rigid inspection law for nurseries, and preparations are developing to extend the work to orchards.

In the eastern portion of Oklahoma cold storage is receiving considerable attention, but even a greater portion of the territory the amounts of fruit are too small to justify the expense. The Pomological Division of the Bureau of Plant Industry, Department of Agriculture, is making investigation in Oklahoma, which will be much more complete than can be made by a single individual. H. P. Gould, Pomologist in Charge, is now making a tour of investigation, and the next Yearbook will contain valuable information both to residents who contemplate investing in the fruit industry, and to those who think of locating with us for a similar purpose.

As we are the youngest of all the states and territories, we hope you will bear with the small showing we are able to make this year, and we promise better things in the future. The climatic conditions have been

unusual and extreme this year—summer heat in March, frosts all through April and May, unusual wet, farmers behind with their work—and yet a considerable quantity of fruit is what we consider most remarkable, and it gives us new hope and stronger faith in our great new country.

ARIZONA—POMOLOGICAL DISTRICTS 13 AND 19.

V. A. Clark, Chairman, assisted by E. L. Jordan.

Fruit-growing in Arizona is looking up after a period of depression. Previous to 1898 the industry had expanded to relatively great proportions, resulting at times in over-production. This was sharply changed, however, by the advent of the "big drought" of 1898 to 1904. Locally this drought is a landmark in recent horticultural history. The scanty and alkali-charged irrigation water caused the loss of a number of orchards, and strawberry growing dropped almost to the zero point. But with the recurrence of abundant rains in 1904 the industry revived quickly. Then the government is at work on the long-projected Tonto dam, which is calculated to insure against a second occurrence of such disastrous results of future droughts.

Horticulturally, Arizona falls into two chief subdivisions: (1) southern Arizona, especially the valleys of the Salt, Gila and Colorado, with semi-tropical climate and products, along with most temperate fruits, but few apples, cherries or bushfruits; and (2) the high, cooler mountain valleys of northern and eastern Arizona, especially the Upper Gila and Verde valleys, producing apples and other temperate fruits.

Apples and other fruits are marketed in up-to-date California style in boxes or baskets. Oranges are shipped out in refrigerator cars as from California. But most Arizona fruit is marketed within the territory. Olive products are increasing in volume, and eastern markets are being sought. Verde Valley growers are as yet hampered by lack of a railroad.

The following are among the varieties most largely cultivated. Many others do well. The apples are grown principally in northern and eastern Arizona; apricots, peaches and pears in all sections; and the others in southern Arizona.

APPLES—Ben Davis family, Arkansas *Black*, White Winter *Pearmain*, Northwestern *Greening*, Jonathan, Mammoth *Blacktwig* and many others, especially varieties from the Middle West.

APRICOTS—Newcastle and Royal.

CITRUS—Washington Navel Orange and *Pomelos*.

DATES—Rhars and many others.

FIGS—Mission, White Adriatic and Calimyrna.

GRAPES—Thompson Seedless.

OLIVES—Nevadillo, Manzanillo, Mission and others.

PEACHES—Elberta, Wheatland, Picquet Late, Salway and others.

PEARS—Bartlett, Keiffer.

PLUMS—Doris, Red June and others.

STRAWBERRIES—Lady Thompson, Michel, Arizona Everbearing, Klondyke.

There are few insects or fungus pests in Arizona. It is too hot and dry for them. The codling moth has recently appeared in northern and eastern sections of the Territory, but not elsewhere. Crown gall is troublesome, and soil fungi do some damage in restricted sections.

An unique pest is the date scale, imported on date palms from Algeria about 1890. This is native in the Sahara desert, and hence naturally thrives in Arizona. It has proved extraordinarily resistant to the usual insecticidal treatments. It was finally overcome by removing the tops of the trees back almost to the crown, and then scorching the stubs and trunks with a gasoline torch such as cattlemen use in singeing cactus for stock.

NEW MEXICO—POMOLOGICAL DISTRICTS 12 AND 13.

L. Bradford Prince, Chairman, assisted by Parker Earle and Fabian Garcia:

Combining the statements received from Mr. Earle and Mr. Garcia, I beg to report that the leading commercial varieties of fruit in the Territory are as follows:

APPLES—Ben Davis, Missouri *Pippin*, Jonathan, Arkansas *Black*, Winesap, York Imperial, Mammoth Blacktwig and White Winter Pearmain. I think I may add for other localities, Grimes *Golden* and Ralls *Janet*.

PEARS—Bartlett, Clapp Favorite, Seckel, Howell and *Duchesse d'Angouleme*.

PEACHES—Alexander, Elberta, Champion, Early Crawford and Hynes Surprise.

PLUMS—Wild Goose, Jefferson and Yellow Egg.

GRAPES—Mission, Muscat of Alexandria and Flame Tokay.

Of injurious insects the codling moth is the principal, but is kept in check by spraying, principally by arsenate of lead. The fruit crop this year is almost an entire failure, except in the San Juan country, on account of late frosts. The great necessity in New Mexico is to find varieties which bloom so late as to be free from this danger.

MONTANA—POMOLOGICAL DISTRICT 14.

R. W. Fisher, Chairman.

Commercial fruit growing in Montana has advanced very rapidly during the past two or three years. Fruit growing in the Bitter Root Valley in western Montana has been a profitable industry for a long period—as time is measured in the comparatively new State of Montana—yet it has been only within the past few years that the fruit growers have realized to the full extent the possibilities to be gained by adopting the most modern methods of harvesting and marketing the crop, and only recently have they come to know the methods of cultivation and irrigation best to pursue. All apples are sold in the bushel box, and the fruit growers have found it pays to take the utmost care in grading and packing their fruit.

To further the interests of fruit growing a Fruit Growers' Union was formed last winter, with a manager who thoroughly understands the business end of harvesting and marketing fruit, to act as the fruit growers' agent. The union will have charge of all grading and packing, thus insuring a uniform pack throughout the valley. The manager will hunt markets and sell the fruit for all the growers who are in the union. A like union was formed in the Flathead fruit district in northwestern Montana. This is a younger fruit valley than the Bitter Root, but the possibilities are just as good, and for certain kinds of fruit, such as sweet cherries, it excels the Bitter Root.

The Gallatin Valley strawberry growers formed an association to handle the strawberry crop for the season of 1907. Through the efforts of the association the growers have realized about \$3.50 a crate of twenty-four quarts for all strawberries grown.

That investors have confidence in the mountain valleys of Montana for fruit growing may be judged from the fact that one company has contracted with nurseries for over 250,000 trees for 1908 delivery. From 12,000 to 15,000 acres in addition to what is now planted will within the next few years be planted to apple trees.

The McIntosh *Red* and Transcendent crabapple are today the most profitable. The McIntosh *Red* seems to grow to its greatest perfection in these mountain valleys, and there is a very good market for all that can be produced. There seems to be an unlimited demand for the Transcendent crab, and these trees produce wonderfully profitable crops. The codling moth and other injurious insects have not as yet made their appearance to any appreciable extent in the fruit districts and fungus diseases are not a serious menace. A profit of \$1,500 an acre is not at all unusual from the crab apple orchard. Practically all commercial

varieties of apples have been tested in the state, and the following seem to be the best to grow: McIntosh, Alexander, Wealthy, Jonathan, Bethel, Maiden Blush and Gano. The State Board of Horticulture has the power to inspect all fruit trees shipped into the state, and fumigate or destroy infected stock, and all fruit shipped in has to undergo a thorough inspection for codling moth and other insect or fungus pests. Authority is also given the Board to inspect and spray any orchard in the state which may be harboring insect or fungus diseases.

OREGON—POMOLOGICAL DISTRICTS 15 AND 16.

M. McDonald, Chairman.

Great strides have been made in this section of the country in the methods of grading and marketing of fruits. Throughout the whole northwest, Hood River, Oregon, perhaps has attained a higher state of perfection along this line than any other section of the Pacific slope. Yet many other sections are fast awakening to the importance of organization and correct methods in handling and packing fruits.

A great stimulus has been given the business on account of the interest taken in the organization of horticultural societies and competitive exhibitions. To illustrate, Salem, Oregon, held a Cherry Fair last year (1906) under the auspices of the State Horticultural Society, at which handsome cups were given as premiums for fruits, in which commercial packing was emphasized. Then only a few exhibitors had their fruit properly packed, but at the Cherry Fair this year the packing was stated by good authorities to be fully one hundred per cent better; and it was a noticeable part of the exhibit that it was the country people and not the regular shippers of fruit that made the most progress along this line.

These competitive exhibits are bound to greatly improve our packing, as they bring out in startling contrast the difference between well and poorly packed fruit, and prove the best means of educating the fruit grower to the importance of careful handling, uniform packing, etc.

Associations representing the different branches of horticulture appear to see the importance of meeting together and discussing subjects of mutual interest, and as a consequence we see horticultural societies, commissioners of horticulture and nurserymen's associations in joint meetings. As a result a much better feeling prevails, and much more effective work is being done than formerly. Better organization, better laws and better packing of fruit is the order of the day in the Pacific Northwest.

New markets are being constantly opened up for our superior, high

grade fruits, and yet other markets will be reached with the superior methods now being put in force for growing, handling, shipping and marketing Pacific Coast fruits.

The growing of walnuts is receiving marked attention on the Pacific Coast at this time. The French varieties such as Franquette, Mayette, Chaberte, and Parisienne, are the kinds that succeed best. This new industry is being taken hold of in its very inception in a much more business-like manner than is usually the case with new fruit planting. Discussion on the walnut industry is taking a wide range, and the best information obtainable in the world is being generously distributed to the prospective planters, with the result that the walnut planting is being made with great care, and proper varieties and strains are being selected for the best planting.

Very few if any new varieties of fruits of superior merit have been introduced in recent years. Many new claimants for public favor are being offered, but from the commercial orchardists' standpoint none of these surpass in all leading qualities the old and well tried sorts. The leading commercial sorts vary from one locality to another, so that it is hard to describe any group that is typical of all sections. Among the leading kinds of apples may be mentioned, Esopus *Spitzenberg*, Newtown *Pippin*, Jonathan, McIntosh, Rome *Beauty*, Winesap, Arkansas *Black*, Baldwin, Northern Spy, King and Wagener.

PEARS—Bartlett, Comice and Bosc.

CHERRIES—Lambert, Bing and Royal Anne, (Napoleon Bigarreau).

PRUNES—Italian (*Fellenberg*) in Oregon and French (Petite d' Agen) in California.

Injurious insects, pests and fungus diseases were never more under control than at the present time. Almost everyone engaged in fruit growing now realizes the importance of watchfulness and thorough application of remedies to eradicate and keep under control the pests and diseases that have been such a great menace to the fruit interest of the Pacific Coast in past years.

Great progress has been made in the intelligent enforcement of horticultural laws, as to inspection of both orchard and nursery work, and each year fruit growers are learning that horticultural laws were not made for the inspection of nursery stock alone, but for the benefit and protection of all of the horticultural interests of the country. Horticultural inspectors are being educated, and are beginning to realize that their work is not of a political nature, with the object of serving one particular faction or interest, but to represent all of the varied interests of their section. Notable among the information that has been disseminated on this very important subject is the Biennial Report of the Ore-

gon State Board of Horticulture, which has been standard among works of this kind for many years, and which has done more to educate the fruit growers of Oregon and adjoining states on insect pests and fungous diseases than any other one means.

The development of cold storage in connection with handling and shipping of fruit is still in its incipient stages on the Pacific Coast, and very little has yet been done to demonstrate the possibilities and advantages along this line.

Reviewing the whole field of horticultural pursuits, I may say that all of its departments may now be considered as on a paying business basis.

REPORT OF COMMITTEE ON WILDER MEDALS.

Summary of List of Awards made at the Meeting of the American Pomological Society, Sept. 24-26, 1907.

SILVER MEDALS.

C. G. Patten, Charles City, Iowa, silver medal. Hybrids—60 apple seedlings of known parentage, 4 named varieties of apples, 3 seedling plums.

Central Experimental farm, Ottawa, Can., silver medal. Results in apple breeding work—26 Swazie seedlings, 14 McMahon by Scott Winter, 15 hybrids *Pyrus baccata* by *P. malus*, 14 of local origin principally of the Fameuse group.

Ellwanger & Barry, Rochester, N. Y., silver medal. Interesting display of 96 varieties of apples, 111 varieties of pears, 32 varieties of grapes.

BRONZE MEDALS.

W. L. Detrick, Julian, Cal., bronze medal. Twenty-one varieties of well grown and carefully selected apples.

Los Angeles Chamber of Commerce, bronze medal. Exhibit of oranges, lemons, pomelos, pomegranates, grapes, plums, prunes, apples, pears, quinces, peaches.

State of Virginia, bronze medal. Apples.

HONORABLE MENTION.

State of Maryland, honorable mention.

Frederick County Fruit Growers' Association of Virginia, honorable mention for apples.

State of Missouri, honorable mention for apples. Unknown seedling referred to Ad Interim Committee.

State of West Virginia, honorable mention for display of fruit.

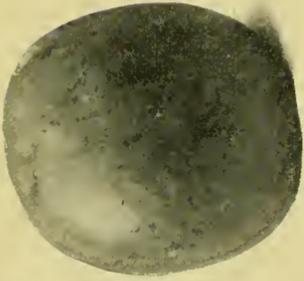
Norfolk & Southern Railroad Company, honorable mention for display of figs, Scuppernong grapes, pomegranates, wild cranberries, pears. This display included the Brunswick fig grown by George W. Arps, who received honorable mention for this variety.

William K. Munsen, Grand Rapids, Michigan, honorable mention for the King grape.

The Rush Persian walnut, originated by J. G. Rush, West Willow, Pa., and seedling apple from Walter Whately, Crozet, Va., were referred to the Ad Interim Committee for final report.

NEW HYBRID AND SEEDLING APPLES EXHIBITED AT THE MEETING BY
C. G. PATTEN OF CHARLES CITY, IOWA.

<i>a</i> Gideon's Mary x Jonathan ("Sweet").	Duchess (No. 21) Patten's Greening
<i>b</i> Shiawassee Beauty	Seedling ("Pippin")
<i>a</i> Pink Anis x Roman Stem (No. 6)	White Pearmain Seedling
<i>a</i> Brier x Pound Sweet (No. 3)	<i>a</i> Gideon's Mary x Jonathan (No. 1)
<i>a</i> Brier x Wolf River (No. 2)	Eastman
<i>a</i> Patten's Greening x Roman Stem (No. 1)	<i>b</i> (Name and number lost) Seedling ("Accident")
Patten's Greening Seedling	<i>a</i> Malinda x Wealthy
<i>a</i> Brier Sweet x Wolf River (No. 5)	Iowa Brilliant
<i>a</i> Striped Seedling x Seek-no-Further	Malinda Seedling (No. 10)
<i>a</i> Patten's Greening x Grimes Golden (No. 2)	<i>a</i> Gideon's Mary x Red Canada
<i>a</i> Patten's Greening x Red Canada (No. 2)	Iowa Beauty
<i>a</i> Patten's Greening x Grimes Golden (No. 1)	Monstrous Pippin Seedling
<i>a</i> Patten's Greening x Seek-no-Further (No. 2)	Monstrous Pippin Seedling No. 1 Seedling No. 1
<i>a</i> Gideon's Mary x Jonathan (No. 2)	<i>a</i> Pink Anis x Jonathan
<i>a</i> Soulard Hybrid	<i>a</i> Oldenburg x Jonathan
<i>a</i> Patten's Greening x Grimes (No. 8)	<i>a</i> Roman Stem x Patten Greening
<i>a</i> Patten's Greening x Grimes (No. 6)	<i>b</i> (For a name) Duchess (No. 4) Malinda Seedling (No. 15) Patten Greening Seedling
Select Roman Stem (No. 1)	<i>a</i> Gideon's Mary x Jonathan
	<i>a</i> Brier Sweet x Wolf River (No. 5) Select Seedling No. 7
	<i>a</i> Brier x Pound Sweet (No. 1)



BRIER SWEET X POUND SWEET



PATTEN GREENING
X GRIMES GOLDEN



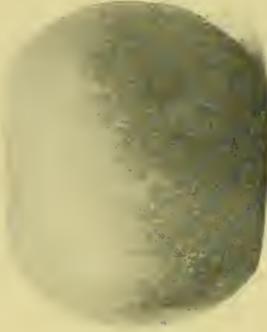
PATTEN GREENING



SILAS WILSON



PATTEN GREENING X ROMAN
STEM



SEEDLING FROM PATTEN
GREENING

SEEDLINGS AND CROSSES OF CHAS. G. PATTEN.

Duchess Seedling	<i>a</i> Patten Greening x Grimes Golden (No. 15)
<i>a</i> Brier Sweet x Wolf River (No. 1) Summer Pear	<i>a</i> Pink Anis x Jonathan (No. 5)
<i>a</i> Ben Davis x Jonathan ("Silas Wilson")	Ben Davis Seedling ("Sweet")
<i>a</i> Soulard Hybrid, 2d Generation	<i>a</i> Soulard x Grimes Golden Select Seedling (No. 18)
Gideon's Mary (No. 6)	Iowa Brilliant
Blue Pearmain Seedling	<i>b</i> Malinda Seedling

SEEDLING PLUMS.

"No. 30"

"No. 1"

"XX"

"No. 18"

*a*Mr. Patten's cross.*b*Not Mr. Patten's seedling.

Those unmarked are Mr. Patten's selected seedlings.

REPORT OF COMMITTEE ON NEW FRUITS OF AMERICAN
ORIGIN.

S. B. Green, Chairman.

POMOLOGICAL DISTRICTS 1 AND 2.

L. R. Taft, East Lansing, Mich.

The following notes were largely secured by correspondence with the parties named.

For Ontario, Professor H. L. Hutt, of the Ontario Agricultural College, reports a number of new fruits, including several apples, but the only one that has been sufficiently tested to warrant a definite report is the Herbert red raspberry. This was originated by Mr. R. B. Whyte, of Ottawa, a member of this society. It has been thoroughly tested at several of the Canadian experiment stations and also at the New York Experiment Station at Geneva, and has every where shown itself to be one of the best of the red raspberries. The bush is something after the type of the Cuthbert, but has a darker and more wrinkled leaf and seems to be much hardier than that variety. It is very productive, and the fruit is large, showy, bright-colored and of good quality. Particularly in the northern section it promises to supersede the Cuthbert.

Professor William Stuart, of Burlington, Vermont, reports favorably on two varieties of raspberries, the Success and Brunette, grown from seed by Mr. C. L. Russell of Norwich, Vermont. As tested at the Vermont Experiment Station, Success resembles Marlboro in shape

and the very large red berries were produced in a moderate quantity, and were of very good quality. The plants were of medium size and vigor. It seems to be well worthy of introduction. Brunette produces a very dark-colored berry below medium in size, and although it made a good growth—the plants were set in 1906—did not appear to be very prolific this year.

Professor F. A. Waugh of Massachusetts Agricultural College reports favorably of the King Philip grape originated by N. B. White, of Norwood, Mass. A strawberry, Clyde No. 3, a seedling of Clyde, originated by A. B. Howard & Son, Belchertown, Mass., is also considered by Professor Waugh very promising for both home use and market.

Professor A. G. Gulley of Connecticut Agricultural College speaks highly of the Oriental, a plum brought out by Mr. F. L. Perry, of Bridgeport, Conn. It is a cross between Burbank and Satsuma, and as it partakes of the characters of both sorts it is a very promising new variety. The fruit is dark fleshed and of very good quality, and is remarkable for the length of time it hangs upon the trees, it being possible to gather ripe fruit over a period of four weeks. Shiro should be added to the list of valuable Japanese plums for Connecticut. The Dudley apple, which originated in Maine, where it is very popular, is also considered by Professor Gulley very promising for general cultivation. Although it takes on a very high color early in September, it keeps well until late winter.

The Perfection currant, introduced by C. M. Hooker of Rochester, N. Y., which received the silver Wilder Medal, on further trial shows that the claims made for it are well founded. The plants are vigorous and the foliage is thick and healthy. It has very long fruit-stalks and large berries of rather mild pleasant flavor.

During the last ten years a considerable number of peaches have been brought out in Michigan. Many of these have Hills Chili for the foundation, and by growing them for a number of generations and selecting the more promising seedlings each time, the hardiness, size and quality have been improved. Among the best and most thoroughly tested is the Oceana. It was originated by B. F. Garver, of Hart, Oceana County, who propagated seedlings of Chili for nearly thirty years, and in the sixth generation secured a variety which he called "Oceana." The trees are much larger and more vigorous than the original parent, which they nearly if not quite equal in the hardiness of fruit buds. The fruit ripens just before Late Crawford, and is as large as and even handsomer than that variety, while the texture and flavor of the flesh are superior. (Introduced by N. P. Husted, Lowell, Michigan.)

Mr. George A. Hawley, of Hart, Michigan, has kindly furnished the following data regarding the "Markham" peach. It was grown from a Hills Chili pit by W. D. Markham, of Hart. The appearance of the tree and the fruit indicate that the pit may have been fertilized with pollen from an Early Crawford tree, as they have characteristics of both sorts. In shape it resembles the Chili and ripens just before that variety, while in color it is more like Crawford, but it is slightly smaller in size. The trees are very hardy and productive, and the fruit is of high quality.

WARK—A seedling found growing in a fence row on the farm of James Wark, of Douglas, Michigan, which resembles Triumph and ripens with it, but is larger in size, less elongated in form and slightly lighter in color than that variety. In texture and flavor it is much like Barnard.

MARQUARDT—Originated by a Mr. Near, of Hart, who commenced with pits of Early Crawford, and after growing several generations of seedlings and selecting the best as parents each time obtained this variety. It was budded, and fifty trees were sold to Rev. Mr. Marquardt. They have borne fourteen consecutive crops. The fruit is large; pit small; skin yellow with a red cheek; flesh yellow and of fine texture and flavor. In season it follows Early Crawford.

KING—A black grape discovered and introduced by Mr. W. K. Munson, of Grand Rapids, Michigan, is believed to be a sport from Concord. The vine is stronger and healthier than that sort, the foliage larger and of greater substance, and the bunches and berries are both considerably larger. The pulp is quite tender, and the seeds, which separate readily, are less numerous than in Concord. The flavor is pleasant, although slightly acid, without bitterness next the skin. The fruit ripens just before Concord, which it equals and often excels in productiveness in Mr. Munson's vineyard. It is especially adapted for home use and local market, but the tenderness of the skin and weight of the bunches do not favor long shipment.

The size and handsome appearance of this grape have given it a ready sale year after year in Grand Rapids at prices 25 to 50 per cent higher than Concord. If it succeeds equally as well in other sections, it will be a most valuable variety.

POMOLOGICAL DISTRICT 9.

Samuel B. Green, St. Paul, Minn.

Among the most promising seedling fruits of Minnesota which continue to attract favorable attention and are destined to be propagated in the near future for general nursery trade, is a seedling apple that was originated by L. W. Prosser, of Leroy, Minn. This is a red apple of

good form and keeping quality, and the tree is said to be hardy. It has not been thoroughly tried as a grafted fruit.

The two most promising apples of the large collection of Malinda seedlings that originated with T. E. Perkins, of Red Wing, are what he knows as No. 54, which is a late keeping oblate fruit of good quality, and his No. 72, which is likewise desirable. The latter is of about the same season, but conical.

J. S. Decker, of Austin, Minn., has for a number of years exhibited a large green apple that has taken a number of prizes. It is like the Rhode Island in shape, and of good keeping quality, but is not yet propagated.

Mrs. M. O. Knowles, of Minneapolis, has for a number of years exhibited a green apple of medium size that keeps until late winter. It is of excellent cooking quality, and the tree is of good form, and apparently fully hardy enough for our conditions, but as yet not sufficiently tried as a grafted fruit.

The Beta grape, which is undoubtedly a hybrid between the *Vitis labrusca* and *V. vulpina*, is giving a good account of itself in severe situations in Minnesota and the Dakotas. It is perfectly hardy in these sections without winter protection and yields heavily. This variety is supposed to have originated about fifty years ago with Andrew Snelter, of Carver County, Minnesota, and was lost to cultivation, but was discovered and propagated by the Minnesota Experiment Station. It is an early maturing variety and is generally ripe at St. Paul early in September. The berries are medium in size, purple, the clusters compact and frequently shouldered. It is quite common for vines of this variety in the vineyard to yield fifty pounds of fruit. While the quality is quite inferior yet it is good enough so that where no other grape is available it is used in considerable quantities in its fresh state.

The Minnetonka Iron Clad raspberry is a seedling variety that originated with F. J. Empenger. It is of good quality, firm, of large size, the plant being vigorous and productive. It is now a popular market sort in the vicinity of Minneapolis and I think is adapted to a wide area.

AD INTERIM COMMITTEE OF AWARDS.

Dr. F. M. Hexamer, General Chairman, 439 Lafayette Street,
New York, N. Y.

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Logan, Utah; W. T. Macoun, Ottawa, Can.; Wm. C. Strong, Waban,

Mass.; W. G. Gano, Parkville, Mo.; E. F. Babcock, Waitsburg, Wash.; Benjamin Buckman, Farmingdale, Ill.

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