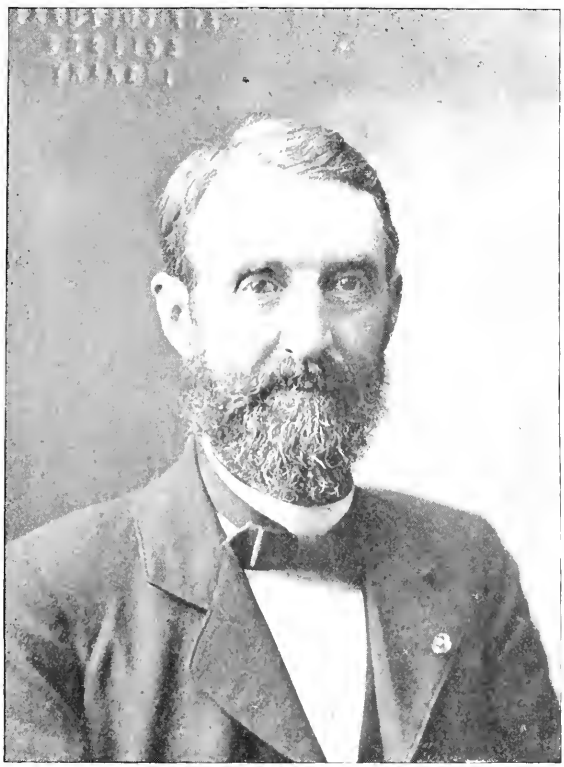
PROSPER JULIUS BERCKMANS,

President of the American Pomological Society, 1887-'97.

(BY COURTESY OF AMERICAN GARDENING.)



CHARLES L. WATROUS.

President of the American Pomological Society.

(By courtesy of National Nurseryman.)

PROCEEDINGS

OF THE

TWENTY-FIFTH SESSION

OF THE

AMERICAN POMOLOGICAL SOCIETY,

HELD IN

COLUMBUS, OHIO, SEPT. 1-2, 1897

COMPILED BY THE SECRETARY.

PUBLISHED BY THE SOCIETY.

LANSING, MICH.
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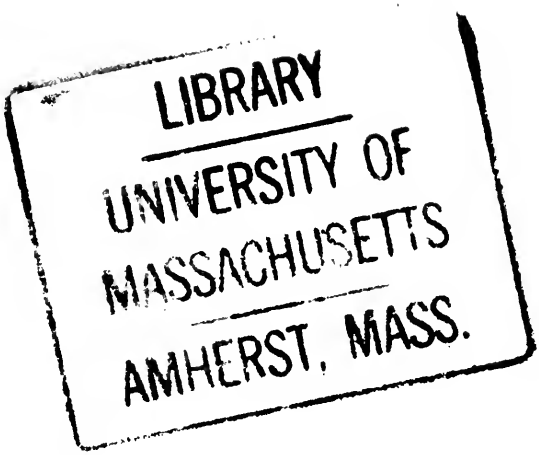
1898



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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 purpose 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 country it may determine, providing 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.

COPY OF 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.

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 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-Presidents, *ex officio*, five of whom shall constitute a quorum, who shall manage the affairs of the Society during its vacation.

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*As amended at Columbus meeting, Sept. 2, 1897, see p. 76.

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 other 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 Native Fruits, 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 native fruits, 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

AMERICAN POMOLOGICAL SOCIETY

FOR

1897-98.

PRESIDENT:

CHARLES L. WATROUS, DES MOINES, IOWA.

FIRST VICE PRESIDENT:

GEO. W. CAMPBELL, DELAWARE, OHIO.

STATE VICE PRESIDENTS:

Alabama	W. F. Heikes	Huntsville.
Arizona	J. W. Toumey	Tucson.
Arkansas	W. G. Vincenheller	Little Rock.
British Columbia	R. M. Palmer, Dept. of Agr.	Victoria.
California	Luther Burbank	Santa Rosa.
Colorado	John C. Bell	Montrose.
Connecticut	J. H. Hale	So. Glastonbury.
Delaware	Alex. Pullen	Milford.
District of Columbia	Wm. Saunders	Washington.
Florida	Geo. L. Taber	Glen St. Mary.
Georgia	P. J. A. Berckmans, Jr.	Augusta.
Idaho	Robert Milliken	Nampa.
Illinois	H. G. McPike	Alton.
Indiana	Sylvester Johnson	Irvington.
Iowa	Silas Wilson	Atlantic.
Kansas	Wm. H. Barnes	Topeka.
Kentucky	A. D. Webb	Bowling Green.
Louisiana	R. Maitre	New Orleans.
Maine	Geo. B. Sawyer	Wiscasset.
Manitoba	A. P. Stevenson	Nelson.
Maryland	Howard Davis	Baltimore.
Massachusetts	W. C. Strong	Waban.
Michigan	T. T. Lyon	South Haven.
Minnesota	J. M. Underwood	Lake City.
Mississippi	S. M. Tracy	Biloxi.
Missouri	Wm. Trelease	St. Louis.
Nebraska	R. W. Furnas	Brownville.

Nevada	Ross Lewers	Franktown.
New Brunswick	W. W. Hubbard	Sussex.
New Hampshire	Frederick Smyth	Manchester.
New Jersey	Wm. Parry	Parry.
New Mexico	W. S. Harroun	Santa Fé.
New York	F. M. Hexamer	New York.
North Carolina	J. Van Lindley	Pomona.
North Dakota	——— ———	———.
Northwest Territories	Angus Mackay	Indian Head.
Nova Scotia	R. W. Starr	Cornwallis.
Ohio	J. J. Harrison	Painesville.
Oklahoma	——— ———	———.
Ontario	Alex. McD. Allan	Goderich.
Oregon	E. R. Lake	Corvallis.
Pennsylvania	Thos. Meehan, Germantown	Philadelphia.
Quebec	Robert Brodie	St. Henri of Montreal.
Rhode Island	J. Erastus Lester	Providence.
South Carolina	Chas. U. Shepard	Summerville.
South Dakota	N. E. Hansen	Brookings.
Tennessee	G. D. Ferrell	Humboldt.
Texas	T. V. Munson	Denison.
Utah	U. P. Hedrick	Logan.
Vermont	F. A. Waugh	Burlington.
Virginia	H. E. Van Deman	Parksley.
Washington	Theophilus Smith	Colfax.
West Virginia	L. C. Corbett	Morgantown.
Wisconsin	E. S. Goff	Madison.
Wyoming	B. C. Buffum	Laramie.

SECRETARY:

WM. A. TAYLOR, 55 Q Street, N. E., WASHINGTON, D. C.

TREASURER:

L. R. TAFT, AGRICULTURAL COLLEGE, MICHIGAN.

STANDING COMMITTEES.

EXECUTIVE COMMITTEE:

THE PRESIDENT AND VICE PRESIDENTS, *ex officio*.

P. J. Berckmans	Augusta, Georgia.
Wm. C. Strong	Waban, Massachusetts.
L. A. Goodman	Westport, Missouri.
Wm. B. Alwood	Blacksburg, Virginia.
John Craig	Ottawa, Canada.

FINANCE COMMITTEE:

Chas. W. Garfield	Grand Rapids, Michigan.
Wm. C. Barry	Rochester, New York.
J. J. Harrison	Painesville, Ohio.

GENERAL FRUIT COMMITTEE:

Chairman, L. R. TAFT, Agricultural College, Mich.

Alabama	F. S. Earle	Auburn.
Arizona	W. H. Winters	Phœnix.
Arkansas	John T. Stinson	Fayetteville.
British Columbia	Thos. A. Sharpe	Agassiz.
California	E. J. Wickson	Berkeley.
Colorado	Chas. S. Crandall	Ft. Collins.
Connecticut	T. S. Gold	West Cornwall.
Delaware	G. Harold Powell	Newark.
District of Columbia	W. N. Irwin, 317 V St., N. E.	Washington.
Florida	W. S. Hart	Hawks Park.
Georgia	George H. Miller	Rome.
Idaho	Robert Milliken	Nampa.
Illinois	Jonathan Periam, 526 Englewood avenue	Chicago.
Indiana	James Troop	Lafayette.
Iowa	Eugene Secor	Forest City.
Kansas	F. Wellhouse	Fairmount.
Kentucky	J. M. Samuels	Clinton.
Louisiana	F. H. Burnette	Baton Rouge.
Maine	W. M. Munson	Orono.
Manitoba	S. A. Bedford	Brandon.
Maryland	J. W. Kerr	Denton.
Massachusetts	J. W. Manning	Reading.
Michigan	C. W. Garfield	Grand Rapids.
Minnesota	A. W. Latham, 207 Kasota Block	Minneapolis.
Mississippi	A. B. McKay	Agrl. College.
Missouri	L. A. Goodman	Westport.
Nebraska	F. W. Taylor	Lincoln.
Nevada	R. H. McDowell	Reno.
New Brunswick	W. W. Hubbard	Sussex.
New Hampshire	F. Wm. Rane	Durham.
New Jersey	I. J. Blackwell	Titusville.
New Mexico	L. Bradford Prince	Santa Fé.
New York	L. J. Farmer	Pulaski.
North Carolina	W. F. Massey	Raleigh.
North Dakota	——— ———	———.
Northwest Territories	Angus Mackay	Indian Head.
Nova Scotia	C. E. Brown	Yarmouth.
Ohio	W. W. Farnsworth	Waterville.
Oklahoma	——— ———	———.
Ontario	L. Woolverton	Grimsby.
Oregon	E. L. Smith	Hood River.
Pennsylvania	Geo. C. Butz	State College.
Quebec	John Craig	Ottawa.
Rhode Island	L. F. Kinney	Kingston.
South Carolina	J. S. Newman	Clemson College.
South Dakota	N. E. Hansen	Brookings.
Tennessee	R. L. Watts	Knoxville.

Texas	R. H. Price	College Station.
Utah	J. A. Wright	Ogden.
Vermont	D. C. Hicks	North Clarendon.
Virginia	Wm. B. Alwood	Blacksburg.
Washington	E. F. Babcock	Waitsburg.
West Virginia	C. S. Scott	Sinks Grove.
Wisconsin	E. S. Goff	Madison.
Wyoming	B. C. Buffum	Laramie.

COMMITTEE ON NEW "NATIVE" FRUITS.

Chairman, F. M. HEXAMER, 52 Lafayette Place, N. Y.

* Districts 1 and 2, S. A. Beach		Geneva, N. Y.
District 3, H. E. Van Deman		Parksley, Va.
Districts 4 and 5, R. C. Berckmans		Augusta, Ga.
District 6, G. L. Taber		Glen St. Mary, Fla.
District 7, G. D. Ferrell		Humboldt, Tenn.
Districts 8 and 9, L. A. Goodman		Westport, Mo.
Districts 10 and 11, C. G. Patten		Charles City, Iowa.
District 12, C. S. Crandall		Ft. Collins, Col.
District 13, T. V. Munson		Denison, Texas.
Districts 14 and 15, Emory E. Smith		Palo Alto, Cal.

COMMITTEE ON FOREIGN FRUITS.

Chairman, P. J. BERCKMANS, Augusta, Ga.

L. H. Bailey	Ithaca, N. Y.
N. E. Hansen	Brookings, S. Dak.
Jno. Craig	Ottawa, Canada.
F. S. Earle	Auburn, Ala.
G. L. Taber	Glen St. Mary, Fla.
Wm. Trelease	St. Louis, Mo.
F. Franceschi	Santa Barbara, Cal.
Emory E. Smith	Palo Alto, Cal.
C. E. Hoskins	Springbrook, Oregon.
Geo. Ruedy	Colfax, Wash.

COMMITTEE ON TROPICAL AND SUB-TROPICAL FRUITS.

Chairman, F. A. KIMBALL, National City, Cal.

E. H. Hart	Federal Point, Fla.
Lyman Phelps	Sanford, Fla.
H. C. Matthams	West Palm Beach, Fla.
Mrs. W. F. Meres	Tarpon Springs, Fla.
F. H. Burnette	Baton Rouge, La.
W. H. Winters	Phœnix, Ariz.
J. E. Cutter	Riverside, Cal.
J. S. Calkins	Pomona, Cal.
Leslie F. Gay	Piru City, Cal.
Geo. C. Roeding	Fresno, Cal.

* See map Part II, p. 10, for boundaries of districts.

COMMITTEE ON NOMENCLATURE.

Chairman, G. C. BRACKETT, Fresno, Cal.

F. W. Taylor.....Lincoln, Neb.
Benjamin Buckman.....Farmingdale, Ill.
E. F. Babcock.....Waitsburg, Wash.
J. T. Stinson.....Fayetteville, Ark.
N. S. Platt.....Cheshire, Conn.
F. A. Waugh.....Burlington, Vt.

COMMITTEE ON REVISION OF CATALOGUE.

Chairman, W. H. RAGAN, Greencastle, Ind.

T. T. Lyon.....South Haven, Mich.
E. J. Wickson.....Berkeley, Cal.
C. S. Crandall.....Ft. Collins, Col.
Silas Wilson.....Atlantic, Iowa.
L. A. Berckmans.....Augusta, Ga.

COMMITTEE TO CONFER WITH U. S. DEPARTMENT OF AGRICULTURE.

Chairman, C. W. GARFIELD, Grand Rapids, Mich.

F. M. Hexamer.....New York, N. Y.
G. H. Miller.....Rome, Ga.

LIST OF MEMBERS.

LIFE MEMBERS.

Name.	Address.
Allan, Alex. McD	Goderich, Ontario.
Allen. Abner	College Park, Cal.
Allen, Edwin	New Brunswick, N. J.
Alwood, Wm. B. (For Ext. Sta.)	Blacksburg, Va.
Andrews, Frank W.	1761 Mass. Ave., N. W. Washington, D. C.,
Appleton, Francis H.	251 Marlboro St., Boston, Mass.
Atkins, Chas. G.	Bucksport, Me.
Austin, Mrs. Helen V.	Winchester, Ky.
Babcock, E. F.	Waitsburg, Wash.
Babcock, J. Lyman	Norfolk, Va.
Baird, David	Manalapan, N. J.
Baker, Chas. R.	Brooklyn, N. Y.
Balmer, John A. (For Agr'l College.)	Pullman, Wash.
Barnes, Wm. H. (For Kan. Hort. Soc.)	State Capitol, Topeka, Kans.
Barry, Wm. C.	Rochester, N. Y.
Beadle, D. W. (For Agr'l College.)	450 Markham St., Toronto, Ontario.
Beal, W. J.	Agr'l College, Mich.
Berryhill, J. G.	Des Moines, Iowa.
Berckmans, Prosper J.	Augusta, Ga.
Black, Chas.	Hightstown, N. J.
Blanchard, N. W.	Santa Paula, Cal.
Bliss, B. K.	Boston, Mass.
Bridgeman, Alfred	Newburgh, N. Y.
Brill, Francis	Hempstead, L. I., N. Y.
Brown, Chas. E.	Yarmouth, N. S.
Bucklin, Simon S.	Providence, R. I.
Buffum, B. C. (For University.)	Laramie, Wyoming.
Burnett, Joseph	Southboro, Mass
Bush, Raphael	Bushberg, Mo.
Butler, Chas.	Hartsdale, N. Y.
Butz, Geo. C. (For Pa. State Coll.)	State College, Pa.
Calder, Rev. James.	102 State St., Harrisburg, Pa.
Calkins, John S.	Pomona, Cal.
Campbell, Geo. W.	Delaware, Ohio.
Carey, Otis	Foxboro, Mass.
Chase, Howard A.	1430 S. Penn Square, Philadelphia, Pa.
Chase, Lewis	Rochester, N. Y.
Clapp, Wm. Channing	Boston, Mass.
Clark, Edmund S.	144 Essex St., Boston, Mass.
Colman, N. J.	St. Louis, Mo.
Conover, Geo. S.	Geneva, N. Y.
Cook, David C.	Chicago, Ill.
Cook, M. S.	Avondale, Pa.
Crandall, C. S.	Ft. Collins, Colo.
Crozier, A. A.	Agr'l College, Mich.
Culbert, Dr. Wm.	Newburgh, N. Y.
Cummings, A. P.	New York, N. Y.
Davis, J. C. Bancroft	1621 H St., N. W., Washington, D. C.
Devol, W. S.	Redlands, Calif.
Durfee, Geo. B.	Fall River, Mass.
Earle, Parker	Roswell, New Mexico.
Ellwanger, George	Roehester, N. Y.
Eshleman, John K	Downington, Pa.
Falconer, Wm. (Supt. of Parks.)	Pittsburg, Pa.
Faxon, M. B.	310 Commonwealth Ave., Boston, Mass.
Field, E. T.	Middletown, N. J.
Fisher, John	Batavia, N. Y.
Force, T. S., Box 2892	New York, N. Y.
Furnas, R. W.	Brownville, Neb.
Gammon, C. W.	Walnut Grove, Cal.
Garfield, Chas. W.	Burton Farm, Grand Rapids, Mich.
Gay, Leslie F.	Piru City, Cal.
Gerrish, O. K.	Lakeville, Mass.
Glen, John G.	Rochester, N. Y.
Goff, E. S.	Madison, Wis.
Gold, T. S.	West Cornwall, Ct.
Goodell, H. H. (For Agr'l College.)	Amherst, Mass.
Goodman, L. A. (For St. Hort. Soc.)	Westport, Mo.
Graves, S. S.	Geneva, N. Y.
Green, W. J. (For Agr'l Exp. Sta.)	Wooster, Ohio.
Grosvenor, C. E.	Boston, Mass.
Guy, T. W.	Sulphur Springs, Mo.
Hackler, William	161 Wister St., Germantown, Pa.
Hadwen, O. B.	Worcester, Mass.
Haines, Henry C.	Germantown, Pa.
Haines, John S.	Germantown, Pa.
Hance, Benj. B.	Pullman, Ill.
Harris, Geo. W. (For Cornell Univer.)	Ithaca, N. Y.
Harris, James A.	Citra, Fla.
Harris, John S.	La Crescent, Minn.
Harroun, W. S.	Santa Fé, N. M.
Hart, W. S.	Hawk's Park, Fla.
Haskell, George	Ipswich, Mass.
Helver, J. W.	Lockport, N. Y.
Herff, B von	93 Nassau St., New York, N. Y.
Hexamer, F. M.	52 Lafayette Place, New York, N. Y.
Hexamer, Mrs. F. M.	52 Lafayette Place, New York, N. Y.
Hoadley, George	22 William St., New York, N. Y.
Hoag, C. L.	Lockport, N. Y.
Holmes, E. S.	Grand Rapids, Mich.
Holton, Warren	Hamilton, Ont.
Honcock, Caroline G. (For Free Library.)	Sacramento, Cal.
Hubbard, T. S.	Fredonia, N. Y.
Hunnewell, H. H.	Wellesley, Mass.
Hunnewell, Walter	87 Milk St., Boston, Mass.
Hunter, John M.	Houston, Texas.
Hyde, J. F. C.	31 Milk St., Boston, Mass.
Jeter, Tinsley	Bethlehem, Pa.
Kendall, Edward	Cambridge, Mass.
Kendall, George F.	Cambridge, Mass.
Kent, Joseph H.	Russellville, Pa.
Kidder, N. T.	Milton, Mass.
King, John A.	Great Neck, L. I., N. Y.

LIFE MEMBERS—Concluded.

Name.	Address.	Name.	Address.
Kinney, L. F. (Exp. Sta.)	Kingston, R. I.	Smith, Benj. G.	Cambridge, Mass.
Kirkpatrick, T. J.	Springfield, Ohio.	Smith, Erwin F	1457 Staughton St., Washington, D. C.
Koen, R. B.	Memphis, Tenn.	Smith, Geo. W.	Hartford, Conn.
Lake, E. R.	Corvallis, Oreg.	Smith, W.	Geneva, N. Y.
Lawver, A. M.	San Francisco, Cal.	Smith, Wm. Brown	Syracuse, N. Y.
Leighton, G. B. F.	Norfolk, Va.	Smith, Wm. Elliott	Alton, Ill.
Lester, J. Erastus	Providence, R. I.	Smith, Wing R.	Syracuse, N. Y.
Lindley, J. V.	Pomona, N. C.	Smyth, Frederick	Manchester, N. H.
Lovett, J. T.	Little Silver, N. J.	Southworth, C.	Stoughton, Mass.
Luke, Elijah H.	Cambridge, Mass.	Stark, Clarence M.	Louisiana, Mo.
Lyman, Henry L.	Charlottesville, Va.	Stark, Wm. Henry	Louisiana, Mo.
Lyon, T. T.	South Haven, Mich.	Starr, Robert W.	Cornwallis, N. S.
Lyons, Jas. M.	18 Harrison St., Taunton, Mass.	Stewart, Brice	Clarksville, Tenn.
Mann, William R.	Sharon, Mass.	Stewart, Henry L.	Middle Haddam, Ct.
Manning, Robert.	Salem, Mass.	Stinson, John T. (For Exp. Sta.)	Fayetteville, Ark.
Marble, F. M.	Worcester, Mass.	Streator, Geo. J.	Garrettsville, Ohio.
Masters, James H.	Nebraska City, Neb.	Strong, Wm. C.	Waban, Mass.
Maude, Chas. E.	Riverside, Cal.	Swan, Robt. J.	Geneva, N. Y.
McCulloch, J. M.	Cincinnati, Ohio.	Swineford, Howard	Richmond, Va.
McDowell, R. H.	Reno, Nev.	Taber, G. L.	Glen St. Mary, Fla.
MacFerron, David	Alleghany City, Penn.	Taft, Edward P	Providence, R. I.
McLaughlin, Henry	Bangor, Me.	Tatnall, Edward	Wilmington, Del.
Meehan, Thomas	Germantown, Penn.	Taylor, Thomas	238 Mass. Ave. N. E., Washington, D. C.
Miller, F. R.	Sugar Grove, Penn.	Taylor, Wm. A.	55 Q St., N. E., Washington, D. C.
Minot, C. W.	17 Park Ave., West Somerville, Mass.	Temple, F. L.	Boston, Mass.
Mudd, Henry T.	Pittsfield, Ill.	Temple, John T.	Davenport, Iowa.
Munson, D. O	Falls Church, Va.	Thomas, Geo. B.	West Chester, Pa.
Murray, R. D.	Moultrie, Fla.	Townsend, B. C.	Bay Ridge, L. I., N. Y.
Newman, J. S.	Clemson College, S. C.	Trelease, Wm.	Botanical Garden, St. Louis, Mo.
Noble, Samuel W.	Jenkintown, Penn.	Trowbridge, Geo. W.	Crestvue, Ohio.
Orton, J. G.	Binghamton, N. Y.	Uber, Carlton A.	Glenearlyn, Va.
Parsons, S. B.	Flushing, N. Y.	Underwood, J. M.	Lake City, Minn.
Pearson, John M.	Godfrey, Ill.	Utley, H. W. (Public Library.)	Detroit, Mich.
Periam, Jonathan	526 Englewood Ave., Chicago, Ill.	Van Deman, H. E.	Parksley, Va.
Perot, Wm. H.	Baltimore, Md.	Van Gelder, Jacob	Saugerties, N. Y.
Phelps, Lyman	Sanford, Fla.	Ware, Benj. P.	Clifton, Mass.
Phœnix, F. K.	Delaven, Wis.	Waterer, Hosea	Philadelphia, Pa.
Popenoe, E. A.	303 Fillmore St., Topeka, Kans.	Watrous, C. L.	Des Moines, Ia.
Pullen, Alexander	Milford, Del.	Watrous, Philip (For Hort. Library.)	Des Moines, Ia.
Purington, E. F.	W. Farmington, Me.	Webber, Wm. L. (For Hoyt Pub. Lib.)	Saginaw, Mich.
Quinn, P. T.	Newark, N. J.	Wellborn, Jesse M.	Conyers, Ga.
Ream, Jay A.	Hustonville, Ky.	Wellhouse, F.	Fairmount, Kans.
Richardson, Chas. E.	101 Tremont St., Boston, Mass.	Whitehead, John B.	Norfolk, Va.
Riehl, E. A.	Alton, Ill.	Whitten, J. C. (For University.)	Columbia, Mo.
Rumph, Samuel H.	Marshallville, Ga.	Wickersham, Robt. A.	Winchester, Va.
Russell, Gurdon W.	Hartford, Conn.	Wieland, John	Knoxville, Tenn.
Sadler, O. W.	Pittsburg, Pa.	Wilder, Edward B.	Dorchester, Mass.
Samuels, J. M.	Clinton, Ky.	Williams, Henry T.	Colorado Springs, Col.
Sampson, F. G.	Boardman, Fla.	Wilson, W. C.	Baltimore, Md.
Saunders, William	Washington, D. C.	Wood, Wm. H. S.	New York City, N. Y.
Sawyer, Geo. B.	Wiscasset, Me.	Wright, Edw.	Des Moines, Iowa.
Searborough, W.	Cincinnati, Ohio.	Yeomans, Wm. H.	Columbia, Conn.
Scott, David A.	Newburgh, N. Y.		
Selover, Edward C.	Auburn, N. Y.		
Shaw, C. C.	Milford, N. H.		
Shepard, C. U.	Summerville, S. C		

BIENNIAL MEMBERS FOR 1897-98.

Name.	Address.
Alexander, J. H.	Augusta, Ga.
Bailey, L. H.	Ithaca, N. Y.
Beach, S. A.	Geneva, N. Y.
Bedford, S. A.	Brandon, Manitoba.
Bell, John C.	Montrose, Colo.
Berckmans, P. J. A., Jr	Augusta, Ga.
Blalock, N. G.	Walla Walla, Wash.
Blackwell, I. J.	Titusville, N. J.
Bowman, A. M.	Salem, Va.
Brackett, G. B.	Washington, D. C.
Brackett, G. C.	143 Glen Ave., Fresno, Cal.
Brewer, Nathaniel	Newport, Fla.
Brodie, Robert	St. Henri of Montreal, Quebec.
Buckman, Benj.	Farmingdale, Ill.
Burbank, L.	Santa Rosa, Cal.
Burnette, F. H.	Baton Rouge, La.
Burtner, M. M.	West Fairview, Pa.
Bush, A. K.	Dover, Minn.
Bush, Isidor	St. Louis, Mo.
Carter, H. W.	Millbury, Mass.
Coffeen, H. A.	Sheridan, Wyom.
Collar, H. A.	Grand Rapids, Mich.
Cone, Moses H.	105 Franklin St., New York, N. Y.
Corbett, L. C.	Morgantown, W. Va.
Craig, John	Ottawa, Canada.
Davis, Howard	Corner Baltimore and Paca Streets, Baltimore, Md.
Dean, M. L.	Agr'l College, Mich.
Dumas, J. L.	Huntsville, Wash.
Earle, F. S.	Auburn, Ala.
Fairchilds, H. L.	Bridgeport, Conn.
Farmer, L. J.	Pulaski, N. Y.
Farnsworth, W. W.	Waterville, Ohio.
Faville, E. E.	Manhattan, Kans.
Ferrell, G. D.	Humboldt, Tenn.
Gammon, Ernest A.	Courtland, Cal.
Gill, Geo. W.	2373 Broad St., Columbus, Ohio.
Glenn, R. M.	Huntingdon Valley, Pa.
Goodrich, C. L.	Hampton, Va.
Green, S. B.	St. Anthony Park, Minn.
Griesa, A. H.	Lawrence, Kans.
Hale, J. H.	S. Glastonbury, Conn.
Halsted, Byron D.	New Brunswick, N. J.
Hansen, N. E.	Brookings, S. Dak.
Harrison, J. J.	Painesville, Ohio.
Hathaway, F. B.	Milton, Vt.
Hedrick, U. P.	Logan, Utah.
Heikes, W. F.	Huntsville, Ala.
Hicks, D. C.	North Clarendon, Vt.
Horvatch, Michael	Glenville, Ohio.
Hubbard, W. W.	Sussex, N. B.
Irish, H. C.	Missouri Botan. Garden, St. Louis, Mo.
Irwin, Wm. N.	317 V St. N. E., Washington, D. C.
Johnson, Sylvester	Irvington, Ind.
Josselyn, Geo. S.	Fredonia, N. Y.
Kerr, J. W.	Denton, Md.
Kimball, F. A.	National City, Cal.
Latham, A. W. (For Minn. Hort. Soc.)	207 Kasota Blk., Minneapolis, Minn.
Lazenby, Wm. R.	Columbus, Ohio.
Lewers, Ross	Franktown, Nev.
Lines, C. P. (For Elm City Nursery Co.)	New Haven, Conn.
Lombard, G. R.	Augusta, Ga.
Lybrook, A. M.	Stuart, Va.
Mackay, Angus	Indian Head, N. W. Ter.
McKay, A. B.	Agricultural College, Miss.
McPike, H. G.	Alton, Ill.
Maitre, R.	7444 St. Charles Ave., New Orleans, La.
Manning, J. W.	Reading, Mass.
Massey, W. F.	Raleigh, N. C.
Mendenhall, E. G.	Kinmundy, Ill.
Meres, Mrs. W. F.	Tarpon Springs, Fla.
Miller, G. H.	Rome, Ga.
Milliken, Robert	Nampa, Idaho.
Monroe, C. J.	South Haven, Mich.
Munson, T. V.	Denison, Tex.
Munson, W. M.	Orono, Me.
Murrell, Geo. E.	Coleman's Falls, Va.
Myrick, Herbert	Springfield, Mass.
Palmer, R. M. (Dept. of Agricult.)	Victoria, B. C.
Parry, Wm.	Parry, N. J.
Patten, C. G.	Charles City, Iowa.
Pedersen, Peder	Huntingdon Valley, Pa.
Phœnix, F. S.	Bloomington, Ill.
Platt, N. S.	395 Whalley Ave., New Haven, Conn.
Powell, G. Harold	Newark, Del.
Price, R. H.	College Station, Tex.
Prince, L. Bradford	Santa Fé, N. Mex.
Ragan, W. H.	Greencastle, Ind.
Rane, F. Wm. (Exp. Sta.)	Durham, N. H.
Reed, Harrison	S. Jacksonville, Fla.
Roeding, G. C.	Fresno, Cal.
Rolfs, P. H.	Lake City, Fla.
Sage, C. D.	N. Brookfield, Mass.
Sanders, L. T.	Plaindealing, La.
Scott, C. S.	Sink's Grove, W. Va.
Secor, Eugene	Forest City, Iowa.
Selby, A. D.	Wooster, Ohio.
Sharpe, Thos. A.	Agassiz, B. C.
Smith, A. L.	Spokane, Wash.
Smith, Emory E.	Palo Alto, Cal.
Smith, E. L.	Hood River, Oregon.
Smith, Theophilus	Colfax, Wash.
Spaulding, Irving (For Spaulding Nursery and Orch. Co.)	Spaulding, Ill.
Stevenson, A. P.	Nelson, Manitoba.
Sturgus, M. B.	Treas'ry Dept., Washington, D. C.
Taft, L. R.	Agr'l College, Mich.
Taylor, F. W.	Lincoln, Neb.
Toumey, J. W.	Tucson, Ariz.
Tracy, S. M.	Biloxi, Miss.
Troop, James (For Exp. Sta.)	Lafayette, Ind.
Vincenheller, W. G.	Little Rock, Ark.
Warder, R. H.	Cincinnati, Ohio.
Watts, R. L.	Knoxville, Tenn.
Waugh, F. A.	Burlington, Vt.
Webb, A. D.	Bowling Green, Ky.
Wickson, E. J.	Berkeley, Cal.
Wilson, Silas	Atlantic, Iowa.
Winters, W. H.	Phœnix, Ariz.
Woolverton, L.	Grimsby, Ontario.
Wright, J. A.	Ogden, Utah.

In Memoriam.

Since the session of 1895 at Sacramento, Cal., many of our old and active members have been removed by death. In recognition of their worth and of our sorrow at their departure, this page is dedicated to their memory.

DECEASED LIFE MEMBERS.

David Allan, Belmont, Mass.
Joseph H. Bourn, Providence, R. I.
E. W. Buswell, Brooklyn, N. Y.
Benjamin P. Cheney, Boston, Mass.
John Cummings, Woburn, Mass.
Franklin Davis, Baltimore, Md.
Robert Douglas, Waukegan, Ill.
Henry M. Engle, Marietta, Pa.
David B. Flint, Boston, Mass.
Jonathan French, Boston, Mass.
Andrew S. Fuller, Ridgewood, N. J.
Robert H. Gardiner, Gardiner, Me.
S. H. Grubb, Philadelphia, Pa.
John C. Hovey, Cambridge, Mass.
I. E. Ilgenfritz, Monroe, Mich.
Hartman Kuhn, Philadelphia, Pa.
C. C. Langdon, Mobile, Ala.
W. H. Mills, Hamilton, Ont.
Charles Osborne, Vassalboro, Me.
Samuel R. Payson, Boston, Mass.
Samuel F. Perley, Naples, Me.
Henry L. Pierce, Boston, Mass.
Edmund Law Rogers, Baltimore, Md.
Henry S. Russell, Milton, Mass.
John Saul, Washington, D. C.
J. R. Shotwell, Rahway, N. J.
B. Smith, Cuba, Mo.
C. W. Spaulding, River Point, R. I.
Milton Thomas, Los Angeles, Cal.
W. H. Wardwell, Boston, Mass.
William Watson, Brenham, Texas.
Aaron D. Weld, Boston, Mass.
J. M. W. Yerrington, Boston, Mass.

DECEASED BIENNIAL MEMBERS.

Dudley W. Adams, Tangerine, Fla.
Mrs. P. J. Berckmans, Augusta, Ga.
J. C. Johnson, Stepney Depot, Conn.
A. H. Manville, Glen St. Mary, Fla.
J. W. Penfield, Willoughby, O.
Dr. C. V. Riley, Washington, D. C.
J. B. Spaulding, Spaulding, Ill.

PREFACE.

The twenty-fifth session of the American Pomological Society was held at Columbus, Ohio, on Wednesday and Thursday, September 1 and 2, 1897, in response to the following invitation from the Ohio State Horticultural Society, which was received during the Sacramento session.

"OHIO STATE HORTICULTURAL SOCIETY,
Waterville, Ohio, January 9, 1895.

"*To the Officers and Members of the American Pomological Society, assembled at Sacramento, Cal.:*

"While our bodies are in the frost-bound and snow-clad Buckeye State, our thoughts are with our brother horticulturists in the land of sunshine and flowers; and we send you our heartiest greetings, and our most earnest wishes for a pleasant and prosperous meeting, that will result in the advancement of our noble profession throughout the length and breadth of our great land.

"We also, in behalf and by authority of the Ohio State Horticultural Society, hereby invite and urge you to hold your next meeting in our State, and assure you if our invitation is accepted we will exert ourselves to the utmost to make the meeting a success in every particular.

"Yours respectfully,

"E. H. CUSHMAN, President, Euclid, Ohio.

"W. W. FARNSWORTH, Secretary, Waterville, Ohio."

The Executive Committee having accepted the invitation, circulars announcing the place and date of the meeting were issued to members and the press in March, 1897. Later in the season provisional programs were issued by the Secretary and by the Secretary of the Ohio State Horticultural Society. All efforts to obtain a reduction in transportation rates failed to secure any concessions other than those which had been granted by railroads within the State of Ohio on account of the State Fair.

Owing to the absence of the former Secretary and the late arrival of the present incumbent, the record of the proceedings of the first

day of the session is necessarily brief. Several papers which were contributed upon invitation of the Executive Committee by persons not in attendance are included in the published proceedings.

Respectfully submitted,

WM. A. TAYLOR, Secretary.

[The Society does not in any way hold itself responsible for, nor endorse opinions or theories expressed in the various papers or discussions found in this volume.]

TRANSACTIONS

OF THE

AMERICAN POMOLOGICAL SOCIETY,

AT ITS TWENTY-FIFTH SESSION,

HELD AT

Columbus, Ohio, September 1 and 2, 1897.

Wednesday, Sept. 1, 1897.

The Society assembled in informal session in Masonic Cathedral at 10 A. M. and was called to order by Pres. Berckmans. Prayer was offered by Rev. Mr. Rusk of Columbus. Prof. Wm. R. Lazenby of the Ohio State University briefly welcomed the Society and extended an invitation to the members present to visit the State Fair during the afternoon to view the large collections of fruit on exhibition there.

President Berckmans responded in a few well chosen words and it was decided that the members should leave the Neill House for the Fair Grounds in a body at 1:30 P. M.

In the absence of the Secretary and Treasurer, Messrs. G. B. Brackett and Geo. W. Campbell were elected to serve respectively as Secretary and Treasurer *pro tempore*.

President Berckmans announced the appointment of the following committees:

Committee on New Fruits on Exhibition—F. M. Hexamer, New York; J. Van Lindley, North Carolina; H. E. Van Deman, Virginia; Jno. Craig, Ontario.

Committee on Program—C. L. Watrous, Iowa; Wm. H. Barnes, Kansas; Wm. B. Alwood, Virginia.

The Society then adjourned until 8 P. M.

EVENING SESSION.

Wednesday, Sept. 1, 1897.

This being a joint session with the Ohio State Horticultural Society the meeting was called to order at 8 P. M. by Prof. Wm. R. Lazenby of that Society who introduced Mayor Black. He spoke as follows on behalf of the city of Columbus:

ADDRESSES OF WELCOME.

ADDRESS OF MAYOR BLACK.

Mr. President and Gentlemen of the American Pomological Society:

It gives me great pleasure indeed as the chief executive of this city to welcome you to our midst. I do not know as much about the business in which you are engaged as I might know, but I am sure that we are all interested in the development and the production of good fruit. The success of your Society means that we shall have better food for our tables and I am certain that we are all vitally interested in that subject.

Your Society represents the noblest interests in which men may engage and I have no doubt that your meeting in this city will be productive of much good, and that fruit growers everywhere will be benefited by your deliberations.

I trust that your stay among us may be both pleasant and profitable and that the objects of your Society may be very materially advanced. We are very proud of our city and we hope that your treatment while here may be such that when you leave you can truthfully say that Columbus is a beautiful and a hospitable city and that her people know how to entertain strangers.

We believe that the capital city of Ohio is one of the best convention cities of this Union, and our people propose that the various conventions to be held in this city this fall, shall go away feeling that the boast of Columbus as a national convention city is not an idle one. I am also pleased to say that Ohio is largely interested in the development and the production of fruit. The variety of climate in Ohio gives us a chance to raise many different kinds of fruit. I have no means of knowing how Ohio compares with other States in the Union in regard to fruit culture, but I am sure that Ohio is always interested in any good thing, and especially in anything that will be for the best and highest interests of this grand Nation. The members of this Society, I understand, come from every State in the Union and represent the best intelligence of your respective communities. You come here as delegates to this convention to confer with each other as to the best methods to be pursued, and to give each other the results of your experience during the past year. I have no doubt that when you go back to your homes you will carry to your people the results of this work and that it will form a guide and inspiration to them in their effort to raise better and more wholesome food. Nothing is more valuable to men than these meetings in which they exchange thoughts, and plans and methods. In fact, so important has it become that almost every class of people in this country now hold their regular conventions, the benefits of which may be seen in the increased interest that is taken in the succeeding years.

I am sure that Columbus feels highly honored to entertain such a distinguished body of men and I believe that you will find no people on the globe more ready to receive you or more attentive to your comforts and pleasures while you are with us. I take great pleasure in extending to you the freedom of this city and trust that you may go away feeling that you made no mistake in selecting this city as your place of meeting.

I hope and trust that you may receive such impressions of us that you may be induced to come again. Our gates are always open to all Societies

having for their objects the elevation or the betterment of civilization, and we welcome to our midst all such gatherings.

Again bidding you welcome and wishing you a pleasant and profitable time I tender you the freedom and the hospitality of this city.

Prof. Lazenby introduced Hon. N. H. Albaugh, who welcomed the American Pomological Society on behalf of the Ohio State Horticultural Society.

ADDRESS OF HON. N. H. ALBAUGH.

Mr. President, and Members of the American Pomological Society:

It gives me great pleasure to welcome you here tonight, as guests of the Ohio Horticultural Society—a Society that is even older than your honored Society, for it passed, and celebrated its semi-centennial anniversary, several years ago. Through this half century it has survived drouth and storms, heat and cold, sunshine and shadow, worms, insects, scale, humbugs and other varieties of bugs, and is today hale and hearty. It has encouraged horticulture in all its legitimate branches, has praised the deserving, and the promising, and decried the fakes and the frauds. It has had among its members true and noble men, such as Warder, Elliott, Kirtland, Bateham, Weltz, Cushman, and a score of others, who have crossed the great divide, not to mention Campbell, Ohmer, the younger Cushman, Farnsworth, and a host of others yet with us. The stage of the action—Ohio—lies centrally in the United States. It has soil and climate suitable for nearly the whole range of substantial fruits, except the citrous. The hills of Southern Ohio, are the home of the apple, and the paradise of the peach, while the lake region of the north equals the south for peach and plum production, and is well and widely famed for its delicious cherries, and its extensive and productive vineyards. In fact every fruit from the native paw-paw up, thrives and flourishes all over the State.

Then, we feel proud, that our State has produced and brought to light such noble fruits as the Rome Beauty, and the Stark, in apples, the Governor Wood, and its kindred in cherries, the Diamond in peaches, the Delaware, and Campbell Early in grapes, the Ohmer in blackberries, the Eureka and Gregg in raspberries, and numbers of others of like prominence and value, and we are also thankful that we did not originate the Wild Goose plum, the Utah Hybrid cherry, nor even the Ben Davis apple, when quality is the standard.

We are especially pleased that on this occasion, we have the pleasure of sitting at the feet of the Gamaliels in Horticulture of the United States and learning of them.

Your session here we hope may be pleasant, you have enjoyed a day's trip among the splendid sights of our inimitable State Fair, and have seen the great and varied horticultural display on her tables. Doubtless you have sampled and discovered the fine and delicate flavor of our fruits, but best of all, you have made the acquaintance of our noble men and women, whom to know is to honor and to respect. We are glad to take you by the hand, even if we do cast a furtive glance here and there, lest the San José scale (like Burns bogles catch us unawares), shall hide away under the lapels of your coats, or up your sleeves, like the Chinaman's twenty-four card pack. God bless you as horticulturists, men standing upon the watch towers, so to speak, to light and illumine our pathway, toward perfection in fruit culture, or to warn us of lions that may be in the way.

Again we say, welcome to our noble State.

Prof. Lazenby then called upon President Berckmans to preside over the joint session and on behalf of the American Pomological Society, President Berckmans responded to the welcoming addresses.

PRESIDENT BERCKMANS' RESPONSE.

Gentlemen—It is with sincere pleasure that I accept the opportunity to respond to the warm welcome extended to the members of the American Pomological Society on behalf of the citizens of Columbus and the members of the Ohio State Horticultural Society. I can assure you that from the courtesies which have already been extended to us since we arrived in your beautiful city that your words of welcome were not merely empty phrases but that you mean what you say. Allow me, however, to take some exception to what Mr. Albaugh has stated in regard to the horticultural possibilities of your grand State. He has not said one half of what could be said. Ohio has given to the Pomological world some of its most valuable products. To our venerable friend and co-worker, George W. Campbell, of your State, belongs the honor of having introduced the Delaware grape, which, years ago made a sensation in the advent of new fruits and is still, until this day, the standard of perfection of American grapes. His name has become widely known through this wonderful introduction, but it will go down to posterity because of his subsequent efforts in improving on this race of native grapes. The crowning event of his scientific efforts is visible before you in the magnificent display of the Campbell Early grape.

Forty-two years ago it was my good fortune to visit your State in company with that illustrious father of pomology, your late venerable president, Marshall P. Wilder, your illustrious citizens, Dr. Warder and Dr. Ernst, and the great pomologist, Charles Downing. We visited Mr. Nicholas Longworth's vineyards at Cincinnati, where the first successful wine-growing enterprise in this country originated and yesterday it was again my privilege to visit those horticultural grounds; horticultural in point of progress; but the change which has taken place since my first visit is most marvelous. By the careful, scientific and esthetic management of Mr. R. H. Warder, the worthy son of the man who did so much for American Pomology, these grounds have been transferred from barren hills into most exquisite landscape features. During that same pomological tour, I also had the pleasure of meeting Dr. Kirtland of Cleveland, the originator, no doubt, of the best varieties of cherries which you have on your catalogue of fruits. There we saw the Catawba grape in its greatest perfection and although a product of the South, it had reached a degree of perfection, which showed the adaptability of many parts of your State to grape culture. But the marvelous changes which have taken place in your State in the last generation show that your people are energetic, active and willing to avail themselves of the great opportunities which are held out to them. And in behalf of Georgia, my own State, I am more than gratified to say that although we have perhaps the best lands in this country adapted to peach culture, they were not fully developed until we had an invasion of some of your Ohio fruit growers. You, Mr. Albaugh, you were not slow in recognizing the possibilities held out by Georgia as a fruit growing section. With you have come many of the citizens of Ohio and you have invested large sums of

money and have increased the land values in our State, but better than all this you have brought with you a system of cultivation that is of great benefit to our Southern fruit growers. We want more of the same class of people, not only from your State but from every section of the United States. As you have visited the South from time to time, you have been assured by the cordial feeling and friendship with which the Southern people entertained you that they bear nothing but the best will toward their Northern friends and especially you have no doubt noticed that warmth of friendship which exists between fruit growers, no matter from what section of the world they come. You will always find a warm welcome when you come among them no matter in what section of the Union you may claim citizenship. It is with sincere pleasure that I tender you the thanks of the American Pomological Society for your friendly greetings. I trust that we may have a profitable meeting and I trust also that the time may come in the future when our Society shall have an opportunity of meeting within your borders. I am sure that it will be a great pleasure to the members of this Society to meet and mingle with the citizens of Ohio.

President Berckmans: I will call Mr. C. L. Watrous, the First Vice-President, to the Chair.

The Chairman: The President's Address is now in order.

PRESIDENT'S ADDRESS.

Members of the American Pomological Society, Ladies and Gentlemen:

When this Society was organized forty-nine years ago there was embodied in its Constitution a clause requiring the presiding officer "to deliver an address on some subject relating to Pomology." This was a comparatively easy duty to perform at a time when the science of Pomology was in its elementary stage of development, and also because its illustrious and venerable President was justly considered as the highest authority upon this pursuit. But we have made so many and such rapid strides in progressive Pomology, because of the scientific discoveries which have been made within the last two scores of years, that it would be considered preposterous in your presiding officer to attempt to literally comply with the Constitutional requirement.

Pomology as it is today can only be progressive when aided by men who are experts in scientific pursuits, and as our assembly is graced by eminent scientists who will deliver papers upon various subjects connected with the aims of this association, I trust that you will pardon me if I do not attempt the delivery of an address which has a special topic for its subject, but allow me to call your attention to such matters as will require your attention during this session, and especially to acknowledge the pleasure in meeting again with earnest workers in a common cause. I greet you most cordially and am sure that your session will result in vast benefit to your avocations.

At the inception of this Society, there existed but a limited amount of Pomological material, and

THE EARLY PUBLISHED FRUIT LISTS

were made up of such varieties as were available; it was a matter of penury as compared with the enormous number of varieties of fruit which are now everywhere obtainable. There were then few obstacles to successful fruit

growing, and with the exception of the American blight in pears, yellows in peaches, and a few injurious insects, the fruit culturist had little else to contend with. As the quality of our fruits improved through better methods of cultivation, but more especially through the careful crossing of varieties, thus combining the highest qualifications of both parents, their constitutional power of resisting disease has been lessened in many of our recently improved fruits. Those of you who are conversant with the fruit culture of a generation ago will recognize the fact that many of our more refined fruits (if I may use this word) are much shorter lived and more liable to the attacks of insects and diseases than were the less improved varieties then in existence, and while we have now numberless excellent varieties to select from, whether for the amateur of commercial orchardist, we must

BESTOW THE GREATEST CARE

in protecting our most valuable material from disaster either from insect pests or fungous diseases.

Fortunately, experts in the sciences of Entomology, Biology, and Vegetable Pathology are unraveling for our benefit, problems which were obscure to the average fruit culturist of a few years since, and to the careful investigations of these men of science, we look for advice and information which will enable us to successfully combat some of the drawbacks which in many sections of this great country are seriously impairing the cultivation of fruits.

THE FUNDAMENTAL PURPOSES OF THE AMERICAN POMOLOGICAL SOCIETY,

are, however, to be foremost in your consideration. These are the improvement of fruit species, their general and rapid dissemination, and the determination of their adaptation to the different geographical zones as well as soils of the United States.

We can no longer entirely depend upon the slow process of accidental seedling fruits for increasing our desirable varieties, but, while we will always find an occasional excellent seedling from this source, systematic methods in crossing varieties must be the aim for keeping our American Pomology in a progressive and satisfactory condition.

But aside from these ethical declarations, we must always hold to the social features of our reunions, where the bonds of friendship between true Pomologists and Scientists are made closer by personal intercourse and an exchange of our individual experience.

THE REPORTS OF THE PROCEEDINGS

of the last sessions of this Society at Sacramento and Los Angeles, California, were published in a reduced sized volume, and your Executive Committee had hoped to hold its 25th session during the past year, but owing to the unsettled political and financial conditions then existing, it was deemed prudent to delay this reunion until the present time.

ANNUAL SESSIONS.

Your finances had to be carefully husbanded because of the small revenues derived from biennial membership fees, which were inadequate to meet more than half the expenses of the Biennial Sessions, including the publication of the proceedings; hence the suggestion made in former addresses,

and accepted as most desirable by your body, that annual reunions be held, could not be carried out.

POMOLOGICAL PROGRESS

is now so rapid, scientific discoveries daily appearing, and their application requiring to be immediate, that some plan must be devised whereby your sessions can be held more frequently. The question of expense seems to be the main difficulty in the way of accomplishing this desired and absolutely necessary change in your past record as well as your Constitution. Biennial sessions were sufficient years ago when everything moved at a slower pace, but they are too far between to keep your Society in the front rank where it has stood so long, so honorably, and so efficiently. I trust that in your wisdom you will be able to adopt a plan by which annual sessions will be possible and our financial revenue increased.

The American Pomological Society, the first of its kind in this country, the mother of many State and county societies, and the model after which many foreign societies have taken pattern, should have a thousand annual members upon its roster, now and in the future.

NEW VARIETIES OF FRUITS.

It is to be regretted that the indiscriminate offering of insufficiently tested new fruits is on the increase, and that the commercial fruit growing interests are frequently injured by the haste with which such novelties are planted in large quantities. Your Society has declined to notice any new fruit that is held under restrictions for general propagation. The Committee on Native Fruits has been exceedingly cautious in its reports and recommended only such as possessed transcendent merits after several years of careful test in several localities. The sending of new fruits to Experiment Stations for testing their relative merits has yielded excellent results, because of the diversity of soils and climate where these fruits have undergone careful tests.

The Committee on the Revision of the Fruit Catalogue has adopted a modified plan from our former reports, one more practical and simple. States have been left out and instead geographical zones have been adopted as more desirable features.

In offering these suggestions I am animated with the earnest desire for the welfare and perpetuation of the American Pomological Society, but from those who are more experienced, and whose practical ability is greater, we expect greater aid and counsel.

NECROLOGY.

Seldom has the American Pomological Society sustained during a short period the loss of more eminent members. Among them were Prof. C. V. Riley, Washington, D. C.; Andrew S. Fuller, Ridgewood, N. J.; Henry M. Engle, Marietta, Pa.; Dudley W. Adams, Tangerine, Fla.; Franklin Davis, Baltimore, Md.; C. C. Langdon, Mobile, Ala.; John Saul, Washington, D. C.; Robert Douglas, Waukegan, Ill. These men whose affiliation and earnest work for so many years aided in furthering the success and high standing of your organization, have passed away to their eternal reward, and I respectfully suggest that a page be dedicated to the memory of our departed friends in the forthcoming volume of your proceedings.

The Chairman: Is the committee appointed at the Sacramento meeting to confer with the United States Department of Agriculture, ready to report?

REPORT OF THE COMMITTEE TO CONFER WITH THE UNITED STATES DEPARTMENT OF AGRICULTURE.

G. B. Brackett: The Committee to which was assigned the duty of conferring with the Department of Agriculture for the purpose of publishing the Revised Fruit Catalogue as a Department Bulletin, beg leave to submit the following report:

Owing to the expense attendant upon a meeting of the Committee, the members of which were so widely separated, it was decided to effect the object of the conference through correspondence. Previous to the appointment of the Committee, Mr. Charles W. Garfield had met Hon. J. Sterling Morton, Secretary of Agriculture, and mentioned the subject to him. The Secretary expressed his willingness to co-operate with the Society in the publication of the Fruit Catalogue; thus the way seemed clear for the accomplishment of the object desired.

January 11, 1896, the Chairman of the Committee addressed the following letter to Prof. S. B. Heiges, Pomologist, Department of Agriculture:

"Denmark, Iowa, January 11, 1896.

"*Prof. S. B. Heiges, U. S. Pomologist, Washington, D. C.:*

"Dear Sir—In accordance with resolutions passed by the American Pomological Society at its last session held in Sacramento, California, January 16-18, 1895, a committee was appointed to confer with the United States Department of Agriculture through the Division of Pomology for the purpose of effecting an arrangement for the publication of the Fruit Catalogue as a Department Bulletin.

"I understand Hon. J. Sterling Morton is in hearty sympathy with the movement, and has offered to publish the catalogue at the earliest opportunity.

"As Chairman of said Committee I write to ascertain the best terms on which the Department will be willing to co-operate. If the Committee on Revision of the Catalogue, of which Mr. T. T. Lyon of Michigan is chairman, should prepare the subject matter ready for the printer, will the Department print the same, and furnish the Society a sufficient number of copies to be embodied in the next volume of the proceedings of the Society? It is important that arrangements for the proposed co-operation be outlined and understood between the Society and the Department as soon as practicable, as the results of the proposed arrangements must have an important bearing upon the revision of the Catalogue, so as to make it conform to the usual size of your bulletins. Hoping to receive an early reply, I am,

"Very respectfully yours,

[Signed] "G. B. BRACKETT."

In reply, Prof. Heiges writes under date of January 22, 1896:

"I have called upon the Secretary of Agriculture and presented the matter of the publication of the Fruit Catalogue of the A. P. S. by the Department of Agriculture to him.

"He is perfectly willing to issue the Catalogue as soon as possible but he decides in order that the Catalogue be published from the funds set aside for bulletins that it must appear as a serial number, but that the title-page should state that it is authorized by the American Pomological Society, and

he further agrees to furnish the Society with 1,000 copies for binding in the Proceedings."

With this understanding of the matter your Committee felt justified in accepting the terms offered and the proposition was submitted to President Berckmans for approval.

Your Committee having performed the duties assigned it, we would now recommend—

1st. That a permanent Committee be chosen by the Society whose duties shall be to confer with the Division of Pomology upon all matters pertaining to nomenclature and description of fruits, so that harmony of conclusions may be reached and that all matters of difference may be amicably adjusted.

2d. That there be established a system of mutual interchange between the Society and the Division of Pomology of all valuable information bearing upon the subject of Pomology and thus the results be made a matter of record and published in the Proceedings of the Society.

With such a committee on the part of the Society co-operating with the Division of Pomology, perfect harmony will be obtained and reciprocity of interest will be secured, the results of which will be of great value to American Pomology.

Respectfully submitted,

G. B. BRACKETT.
CHAS. W. GARFIELD.
G. H. MILLER.
C. L. WATROUS.
F. M. HEXAMER.

President Berckmans having resumed the Chair the discussion of new fruits was taken up.

DISCUSSION OF NEW FRUITS.

GRAPES.

Campbell Early.

Mr. Geo. W. Campbell upon the request of several members made a statement of the origin and history of this grape.

He stated that it was a seedling resulting from a cross of Muscat Hamburg on Belvidere, which originated about twelve years ago, that it was the result of a long series of experiments looking toward the improvement of our native grapes.

The variety was characterized as larger, earlier and of better quality than Concord, with tough skin, tender, melting flesh and few seeds, the berries adhering well to the stems even when fully ripe. He believed it would stand transportation well and that it would be found a distinct improvement over any variety of native parentage yet introduced.

Dr. Hexamer testified to the superior carrying quality of the variety. He had received it by express in perfect order during two seasons and was satisfied of its superiority as a shipper, as well as for dessert.

Brilliant.

Mr. Woodward: I have Brilliant fruiting for the first time and am somewhat disappointed in it. The clusters are imperfect and it seems subject to mildew.

PEACHES.

Diamond.

Mr. Albaugh: This variety, which originated in Athens Co., Ohio, and was introduced by our firm does not come up to our expectation in the south. As grown in Ohio and Kentucky it is far superior to those of the same variety grown in Georgia. It is slightly adherent to the stone but sufficiently free to cleave into perfect halves for canning.

Gold Dust.

L. A. Goodman: This clingstone variety which has been largely planted in southern Missouri is one of the best varieties for that region. It ripens from Aug. 20 to Sept. 1, is large, finely colored and of good quality.

RASPBERRIES.

Miller (red).

Prof. W. J. Green: It is a good early variety though in productiveness it has hardly equalled my expectations upon the Experiment Station grounds.

Prof. Van Deman: On the Chesapeake peninsula this variety has been very profitable and is largely planted by commercial growers.

King (red.)

Prof. H. E. Van Deman: In some localities this is one of the best early varieties; it succeeds well on the grounds of the Messrs. Thompson, near Richmond, Va., with whom it originated.

Lotta (black).

Prof. Green: This black cap, which originated in Kansas, is one of the most promising new varieties. It is better than the Kansas. It is about as large as Gregg and is very productive.

W. W. Farnsworth: Lotta has done very well with me this year. It is about three days earlier than Gregg.

Eureka (black).

Prof. Green: This is very slightly earlier than Kansas.

STRAWBERRIES.

Brunette.

Mr. J. H. Kingsbury: The Brunette, which originated with Mr. Granville Cowing of Muncie, Indiana, is the result of a long continued effort in strawberry breeding. It is regarded as one of the best varieties in quality that is grown in our section.

Prof. Van Deman: It is one of the best for the amateur grower.

Prof. Green: It excels all others in quality where it succeeds, but it is exceedingly variable and sometimes fails entirely.

Ruby.

Prof. Green: A promising variety, late in season and dark red in color.

Brandywine.

Prof. Green: It improves upon acquaintance; is not very productive, but is of excellent quality.

Upon motion the Society adjourned to meet in same hall, Thursday, Sept. 2, at 9 A. M.

THURSDAY MORNING SESSION.

Thursday, Sept. 2, 1897, 9:15 A. M.

The meeting was called to order by President Berckmans.

The Committee on Program, through Chairman Watrous, made a report recommending that the reading of papers proceed in accordance with the published program and that, in the discussion of papers, speakers be limited to five minutes each.

The Committee further recommended that the election of officers be held at the opening of the afternoon session.

The report was adopted by a unanimous vote.

President Berckmans suggested that in accordance with the time honored custom of the Society a Committee on Nominations be constituted, through the selection of one member by each of the State delegations and that the delegations of the several States decide upon their State officers and report to the Committee on Nominations.

Upon motion of Mr. C. L. Watrous this form of procedure was unanimously agreed to and the State delegations were instructed to report their selections to the Committee on Nominations previous to the afternoon session.

Before proceeding to the regular order Mr. H. G. McPike was recognized for the purpose of making a statement concerning the origin of the McPike grape.

Mr. McPike stated that he had long been interested in grape culture in Ohio and Illinois and that he had fruited 300 varieties including several of the *vinifera* species upon his own grounds at Alton, Ill., this year. He had long ago recognized the need for an earlier and better grape than the Concord, and as the result of his efforts in the growing of seedlings he had found in the one now designated as the McPike, a seedling of Worden, the characteristics he had sought. He described it as very much larger in berry than Concord or Worden, as early as the latter and better in quality, enduring both extreme cold and intense heat better than either of those varieties. He had found it to succeed well when grafted upon other varieties. Mr. McPike exhibited specimen clusters and branches and invited the members of the Society to sample them for quality.

President Berckmans: I will announce the appointment of a Committee on Resolutions as follows: Jno. T. Stinson, Arkansas; H. C. Irish, Missouri; Wm. A. Taylor, District of Columbia.

President Berckmans: We will now proceed with the regular order of the program.

WHAT RELATION SHOULD THE AMERICAN POMOLOGICAL SOCIETY HOLD TO THE NATIONAL DIVISION OF POMOLOGY?

BY G. B. BRACKETT, POMOLOGIST, U. S. DEPARTMENT OF AGRICULTURE.

In presenting this question for consideration I am fully aware that some difficulties will be met in determining what should be a proper relation between the two organizations to each other that they may best subserve the interests of American Pomology, and probably there will be some

individual objections, but that the two organizations should work in complete harmony with each other we hardly believe the general public will question.

The two, by their declarative purpose, have the same object in view, viz.: The promotion of the Pomological industry of the country.

The Division of Pomology collects and distributes information in regard to the fruit interests of the United States, investigates the habits and peculiar qualities of fruits, their adaptability to various soils, climates, conditions of culture, and introduces fruits from foreign countries.

The American Pomological Society announces its object for organization as follows:

Article 2, Constitution:

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

This is brief but is substantially the declaration of the Government Department.

Here we have two separate organizations with substantially the same object in view, but each working independently of the other.

One is amply equipped and maintained by Government appropriation and capable of doing extensive, thorough and valuable work if wisely directed into lines having a practical bearing upon the industry it claims to serve, and being supported by public funds it should be beneficial directly to the public.

The other is maintained by membership fees mainly, and while it has the brains and brawn of the Pomologists of the nation its work must necessarily be more or less limited on account of its limited funds and in no capable manner can it meet the demands of the developed status of the industry.

In view of these conditions the title question is presented for the purpose of exciting your efforts to devise some method of co-operation between the organizations which will unite and concentrate their energies in harmonious action resulting in the greater usefulness of both, for the good of American Pomology.

The American Pomological Society has done a grand work in the past even with its limited funds but conditions have materially changed and the development of the industry has been rapid and extensive. It has outgrown the Society's means and the demand for adequate help can no longer be met. Scientific investigation is demanded; thorough and critical experimentation is required to meet the contingencies developed under present conditions, all of which are too costly to be met from private funds. Already has this fact been recognized by many of the veteran members of this Society and who are now looking to the Government Department for a solution of problems highly important to the success of the Pomological industry. The Department of Agriculture through the Division of Pomology is in position to provide for the needs of the industry far better than any other institution and only needs the directing hand of able and practical men interested in Pomological development of the resources of the nation. It has already acknowledged the importance of having the co-operation of this Society to aid it, by publishing as a Department Bulletin our Fruit Catalogue as revised by a committee appointed by this Society, a copy of which will be sent to each member of the Society without cost, and on more than one occasion has the Secretary of Agriculture expressed a desire to work in harmony with the American Pomological Society for mutual benefit. Co-operation will not only materially aid the Department in its efficiency, but equally

as much that of the Society, and it almost seems to have become a necessity under present exigencies for the promotion of greater usefulness in each organization.

There may be objections on the part of some of the members of the Society to such a relation with the Government Department on account of the fear that the Society be absorbed by the Department. This fear, in my opinion, is entirely groundless and from the very nature of conditions, that result from such a relation cannot occur, because the Department, so far as co-operation has been entered into, has voluntarily expressed a ready consent to properly accredit the Society for all assistance rendered it, and I believe it would so fully appreciate such a relation as to announce it to the public for the purpose of strengthening confidence in both organizations.

I should hesitate long before believing, and then only upon the most positive evidence, that a man of such high character as Secretary Wilson has shown himself to be in all public matters, and especially in all lines relating to our nation's Agriculture, would commit himself to an act of injustice towards the American Pomological Society, an organization which has fostered American Pomology from its infancy and developed it to its present status upon this continent, a Society held in highest esteem throughout Europe for its efficient work.

In the relation herein suggested, this Society being composed of the most intelligent and practical Pomologists of the nation should be recognized by the Government Department as an advisory body and through a board of its best qualified members appointed by the President, all matters of important concern to the Pomological industry should be duly considered and placed under investigation of the Division of Pomology.

In return for the assistance of this Society the Division should furnish each member with a copy of its publications treating of all matters submitted by the Society's Committee and also publish the Fruit Catalogue as revised from time to time as occasion requires.

This subject should receive your careful consideration at this time, as it is quite evident that the Society cannot, with its limited means keep abreast with that rapid and extensive development of the industry which marks the present era. If a full co-operation and close affiliation between the two organizations can be effected the perpetuity of the American Pomological Society will be assured.

DISCUSSION.

Prof. Van Deman: I hope I will not be regarded as egotistic when I state that I am the originator of the Division of Pomology, as many of you know. The first conception of the formation of that Division came to me while on the way home from the New Orleans Exposition in 1884, the thought having resulted from some remarks by the late Mr. Peffer of Wisconsin. He was a man like Dr. Warder, Charles Downing, Marshall P. Wilder, A. S. Fuller and many others who have spent their lives in the service of American Pomology, unrequited and oftentimes to their own financial loss. They have done this work through all these years from a pure love for the great cause of American Pomology. Many others who are here today, among them Mr. Campbell and President Berckmans have been faithful workers from the love they bear for the work and their interest in the advancement of the Society. Very much of the success of this organization is due to the efforts of these men who have done the work largely at their

own expense. It is a public work and my idea is that public work should be done at public expense. That was the thought that led to the organization of the Division of Pomology. At about that time or in 1885 I suggested it to N. J. Colman of the Department of Agriculture, whom I met at St. Louis, on my way home from New Orleans. Later I was called to take charge of the Division at a sacrifice of my time and home and went to Washington and carried forward the work of the Division of Pomology to its present status. Co-operation between this Society and the Division I hold in the highest esteem and their interests should be one and the same. Some thought there would be a rivalry between them and some even tried to discourage co-operation between the Society and the Division, but I hope that when we are dead and gone they will continue to labor side by side in this grand work. I assure you that I shall work to that end as long as I live.

Dr. Hexamer: I most heartily concur in what has been said in this paper. In fact I believe that it is an absolute necessity that these two organizations shall work together. It is a strange coincidence that similar conditions existed nearly fifty years ago. It was in the State of Ohio that the American Pomological Congress was formed. Before that there had been two distinct organizations at work for the same end, meeting at different places in the State of New York. The "National Pomological Convention" met at Buffalo, N. Y., in September, 1848 and under the name "North American Pomological Convention" met at Syracuse, N. Y., in September, 1849. The "American Congress of Fruit Growers" met in the city of New York in October, 1848, and again in the same city in October, 1849. At the sessions of both Societies in 1849 committees were appointed to arrange for a union of the two organizations and this resulted in the organization of the American Pomological Congress in 1850 at Cincinnati. The next meeting of the Society (1852) was held in Philadelphia and there the name was changed to the American Pomological Society. At that meeting Marshall P. Wilder was elected President and he retained that position until his death. Now it is strange that under similar conditions we come again to Ohio. We are all working for the same object. I think the sooner the suggested co-operation can be effected the better it will be. There is one point upon which I am not satisfied and that is that the Society should be considered an advisory body. I think it should be co-operative rather than advisory. With it the work of the Division can be made far more valuable than could be done by a Society. I think the Society can concentrate the work of the State and local societies better than the Division. As Mr. Van Deman has stated the labor is vast when we recognize the needs of the country and I do not see why this co-operation should not be brought about. I believe it will result in great benefit to the whole country and to the world.

Prof. Lazenby: I was very much pleased to listen to the historical facts presented by Dr. Hexamer in regard to the early life of the Society. If I understood the matter correctly from his speech it had its inception in 1848. Now if this be true, then next year will be the fiftieth anniversary, and in conformity with the suggestion that we should have annual meetings, I think steps should be taken to meet next year and to have a grand jubilee at some point. I think it proper that we should celebrate the fiftieth anniversary in a fitting manner.

Jonathan Periam: I have always been interested in the progress of horticulture and its kindred topic floriculture. When I became interested, Cook County was a wilderness and the streets of Chicago were covered with

grass. I recollect what we passed through in Illinois in the early days of horticultural organization. The Northwestern Fruit Growers' Association was the only society and it was afterwards merged into the Horticultural Society of Illinois, which met at Alton. I was one of the members present at that meeting. I am still interested, as an old man, who has been for sixty years engaged in getting something out of life. I am also interested in the development of the sciences relating to agriculture as well as the art which is ours. I was much interested in the remarks concerning the life and works of the men who are dying off rapidly and I want to say what we require is to interest the young men who are to take the places of the older men as they die off. It is very important that young men of good education should take up this work after the older men are gone and carry it forward. We no longer have Marshall P. Wilder with us, nor Dr. Warder, nor Mr. Shepherd nor many others that I might name. They are gone, but we want young men, men of twenty or thirty or forty years of age, who will come into this Society, improve its plans and carry forward this great work that has been so nobly done for the last fifty years.

Prof. Van Deman: I wish to state with regard to the practical co-operation of the Division of Pomology and the American Pomological Society that a part of the plan I had, was that the government should as far as possible back up the Pomological Society and assist it and co-operate with it in the publication of its Proceedings. I tried to get Secretary Rusk to appropriate funds for this work. He thought it would be impossible from the fact that other societies would demand that we publish their Proceedings. Of course, we cannot get this done now, but the time will come when they will be so published. We are working together and if we continue to work we shall see greater things in the future than we have in the past.

Mr. Watrous: I rise to speak on one single point that has been raised in this discussion and that is in regard to the joint work, the co-operative work, of this Society and the Division of Pomology. It seems to me that it is not possible, that we should have any fear of a rivalry between these two organizations. To my mind any supposition of this kind is groundless because the Division of Pomology is ours and we are the people. We in the American Pomological Society represent the people of this nation and the Division is a cog in one of the wheels of the great machinery of the government, which is also ours, and we pay for it at the end of the row with our own taxes. I see no reason why we may not appoint a committee here who will devise a method of closer work or union. The idea I desire to present is that the Society is to help the Division and the Division is to help the Society. We are to help all the people who are interested in pomology and we may go forward with this work of consolidation without any fear as to the possibility of a rivalry or the loss of dignity on the part of this Society. It seems to me that the Division should be regarded as a wisely invented machine, capable of doing fine work for the people, whom we represent. When we agree to meet and to lay out some method of closer co-operation, we can take up the different pomological regions of our country and the problems which are in some degree peculiar to these regions, and the Division can co-operate with us and take up these problems and solve them. For instance, I might mention insects which affect some regions more than others and they might also assist in preventing the practice of foisting old fruits on the public under new names. In this

way each can help the other and I feel confident that these questions will be solved in a proper manner.

Mr. McPike: I agree fully with the views that have been already expressed by those who have preceded me. I apprehend that the result will be about as indicated in the report and I therefore move a committee of three to formulate a plan for such action.

Dr. Hexamer: Is there not such a committee already in existence?

Pres. Berckmans: There is a committee on Revision of Catalogue, but that committee has no other powers. This committee will be a continuation of that committee and its work. That committee has taken the matter in charge and the Catalogue is to be published by the Department. If there are no objections I will direct this same committee to carry out this matter and formulate the necessary plans.

At this point the Hon. James Wilson, Secretary of Agriculture, entered the hall and was conducted to the platform.

President Berckmans: Gentlemen of the American Pomological Society, it is with the greatest pleasure that I have the honor of introducing the Secretary of Agriculture, Mr. Wilson, and before he begins his speech I want to say that the matter now under consideration is the co-operation of the American Pomological Society and the Division of Pomology and we know our co-operation will be in the future, as in the past, both pleasant and profitable.

REMARKS BY SECRETARY WILSON.

Mr. Wilson: Mr. President and Gentlemen. I merely came up here today to take off my hat and pay my respects to your Society as a matter of pleasure to myself. As to the matter of the relation between yourselves and the Department of Agriculture I beg to assure you that everything will be done that can be done (applause), you have only to let us know what you want and as far as our means go we will help you. I find the American people in co-operation along all these lines. There are some things the individual man can do for himself and there is some information in regard to what is going on in this hemisphere of ours that the individual man can not learn for himself, which the Department can find out. You should know what is going on in your fields. I propose to open up the Gulf ports to the shipment of perishable goods. I am in correspondence with the steamship lines of Galveston to provide for the shipment of butter and cheese and eggs to other countries and I shall also endeavor to help you send your fruits throughout the world by the cheapest way possible. I have asked these great steamship lines to place refrigerators on their vessels for this purpose. I was in Congress when we wanted steamships to come up from the mouth of the Mississippi River to load grain. We accomplished it and New Orleans is now one of the greatest export cities in this country. Cattle and grain now go from New Orleans through the Gulf of Mexico and our fruits should go the same way. We have not succeeded fully yet because it is entirely a new thing, but I got the railroad companies to help to bring a pressure upon the steamships to put in refrigerators and just as soon as they find out there is money in it they will do it. You may be surprised to know that until recently you could not get butter from New York to London any better than you could get it to the Klondyke. Now we can do it because the steamships find that there is money in it for them. I have just returned from a visit to the Mountain States of Colorado, Wyoming,

Utah, Idaho and Montana and have been looking into the reasons why stock in that country has become utterly worthless. I have been inquiring into the capacity of these states for growing sugar beets. We want to make our own sugar. I also looked into the fruit business. I went down to Grand Junction and I was somewhat surprised at the growth of fruits down there. I want you to keep your eye on that region. To begin with it is mountainous and these mountains through generations by disintegration have filled up the valleys with the finest plant food the world ever saw. You may search the world and you will not find finer plant food than in these valleys and things grow there better than anywhere else in the world. They lead the rivers out of their beds to fertilize the plains and they plant trees. In fact they have done this in all the Rocky Mountain States. In regard to the irrigation of the lands it may be of interest to know how they do it. In a great many of the valleys they use all the water they have and the country is not half wet because there is not enough water. They were better off in this regard some years ago when the timber protected the water by storing the snow that fell on the mountains. There are some of these rivers, however, which are going to waste. For instance, the Grand and the Gunnison rivers send a large amount of water out which is not used for anything. It will require a large amount of capital to lead that water out to the high land. The people there think that we should dam up the water on this land which they got for nothing and let them use it. It is well to keep yourselves posted on this region. I have said more than I expected to say when I came in, because I told you in the beginning that I came in to pay my respects to you. I want to say, however, that whatever Col. Brackett promises you I will carry out to the last dollar. (Applause.)

The following paper was then presented:

WHAT SHALL WE SEEK ABROAD?

BY WM. A. TAYLOR, DEPT. OF AGRICULTURE, WASHINGTON, D. C.

At first glance the lists of varieties of fruits grown within our borders would seem to be sufficiently large to satisfy the needs of all sections of the United States. In the forthcoming catalogue, which will accompany the proceedings of this session of the Society, 1109 cultural varieties of fruits, and nuts belonging to 57 species are listed and starred for the various fruit districts. In addition to these, 175 species and botanical varieties which have not produced cultural varieties sufficiently distinct and valuable to be worthy of cataloguing, are listed under the heading "Native and Introduced Species Grown Under Cultivation."

With such an array before us and with prairies and forests rich with native species full of promise to the patient and judicious experimenter, what need have we to seek for more abroad? Our answer shall be briefly this, that there are undoubtedly many foreign species of fruit and nut bearing trees and plants which are likely to be valuable additions to our pomological flora, that have not yet been introduced. With our broad range of latitude and longitude, the diverse elevations, exposures and soils found within our borders, we can probably find somewhere in the United States suitable conditions for the production of all the known fruits and nuts of

the world, save those that are strictly tropical. We have not as yet tested more than a small fraction of the described species that are believed to be capable of marked improvement under cultivation, either as producers of fruit or as stocks on which to work species already grown.

In consequence of the activity and generosity of some of her citizens, notably the late General Sanford, it is probable that a larger number of foreign species of fruits have been introduced and cultivated in Florida than elsewhere in this country and yet Swingle states* that of the 70 known species of the tribe Aurantea which includes the citrous fruits, Florida's main horticultural dependence, not more than 8 or 9 have been grown in that state, and of these not half had at that time, 1893, been tested for stocks and not a third in crossing and hybridizing.

The most superficial investigation of the subject reveals the fact, that notwithstanding the remarkable progress in the development of fruit culture in the United States, a progress which has been especially noticeable since the organization of this Society, there are yet many known types of fruit and nut bearing species not found in our nurseries and orchards, or even in our experimental collections. In the hope that attention may be directed to a few such, brief notes on a few species, culled from various authorities, but largely from the last edition of Baron Von Mueller's interesting work†, are appended.

SPECIES WORTHY OF INTRODUCTION TO THE UNITED STATES.

Alibertia edulis A. Richard. (Rubiaceæ.) Guiana, Brazil and southward shrub; fruit edible and known as Marmeladinha.

Ananassa bracamorensis Linden. (Bromeliaceæ.) Highlands of Peru. Said to be a very large pineapple of fine flavor.

Bactris gasipaes Humboldt. (Palmæ.) Syn. (*Guilielma speciosa* Martius.) The Peach Palm of the Amazon River, ascending to the warm temperate region of the Andes. Fruit grows in large bunches. Described as having a flavor when cooked, between that of the potato and the chestnut, but superior to either.

Carica candamarcensis Morren. (Passifloreæ.) Andes of Ecuador up to an elevation of about 9,000 feet. Fruit up to 9 inches long and sometimes nearly as broad; used raw or cooked.

Castanopsis argentea A. de Candolle. (Cupuliferæ.) A lofty tree in the mountains of Farther India. Produces edible "chestnuts."

Castanopsis indica A. de Candolle. Mountains of India at about 4,000 feet. This Oak-Chestnut produces seeds with the taste of filberts; *C. tribuloides* (Kurz) also yields small "chestnuts."

Chrysophyllum pruniferum F. V. Muell. (Sapotaceæ.) The Australian Cainito. An evergreen tree, sparingly dispersed from the north of New South Wales, through the coast forests of Queensland. The fruit is of a plum-like appearance and edible.

Citrus australasica F. V. Muell. (Rutaceæ.) Coast forests of extra-tropical Eastern Australia. A shrubby species with ellipsoid or almost cylindrical fruits of lemon-like taste, measuring 2 to 4 inches in length. Probably capable of improvement in fruit, through culture.

Citrus Planchoni F. V. Muell. Forests near the coasts of sub-tropical Eastern Australia. A noble tree fully 40 feet high with globular fruit about the

*Proc. Fla. Hort. Soc. 1895, p. 113.

†Select Extra Tropical Plants Readily Eligible for Industrial Culture or Naturalization.

size of walnuts, called in Australia "Native Oranges." Fruit capable of improvement by cultivation. Worth testing as a stock for citrus in this country.

Eugenia australis Wendland. (Myrtaceæ.) West Australia. A handsome bush, the palatable fruit of which is utilized particularly for jam.

Eugenia Jambolana Lamarck. Southern Asia, ascending to 5,000 feet in Kumaon, Polynesia, probably hardy in extra tropical latitudes. The fruit of this handsome and finally tall tree is about cherry size, purplish black when ripe, and edible; it may perhaps be improved by well directed skillful culture.

Eugenia Malaccoides Wight. Ceylon, up to 7,000 feet elevation. Fruit of the size of a small cherry.

Eugenia Nhanica Cambess. South Brazil. The berries, which are of the size of plums, are there a table fruit.

Eugenia pyriformis Cambess. "Uvalho de Campo" of South Brazil. Fruit of pear size and edible.

Eugenia revoluta Wight. Ceylon up to heights of 6,000 feet, berry one inch in diameter, edible.

Eugenia rotundifolia Wight. Ceylon up to 8,000 feet; rejoicing therefore in a cool even climate. The fruit of this and the allied *E. calophylloides* Wight which extends to Upper India, edible: so that of *E. arnottiana* Wight which tree ascends to 7,000 feet.

Eugenia suborbicularis Bentham. Northeast Australia, in cool mountain regions. The fruit is as large as a medium sized apple: the pulp is edible, acidulous, containing red sap, but the seeds are large.

Eugenia supra-axillaris Spring. The "Tata" of South Brazil; fruit large, edible.

Eugenia Tierneyana F. V. Muell. Northeastern Australia. A tall tree. The red fruit is not large, but produced in good quantity and can be made into a palatable jam.

Ficus Sycomorus Linn. (Urticaceæ.) The Sycamore Fig tree.

Garcinia Mestoni F. M. Bailey. (Guttiferæ.) Northeastern Queensland. Ripens its Mangosteens up to the cool elevation of 4,000 feet, the fruit attaining the size of ordinary oranges.

Gourliea decorticans Gill. (Leguminosæ.) The "Chanar" of Argentine and Chili. Bears sweet, pleasant fruits, and yields a tough, valuable wood. As an orchard tree hitherto not important but it may be improved by selection and cultivation.

Harpephyllum caffrum Bernhardi. (Anacardiaceæ.) The Kaffir Plum tree. South Africa. A large, spreading, evergreen tree, the fruit of which makes a fair preserve, the timber is used for furniture and wagon work. Sometimes planted at midsummer as fencing poles, each of which grows, forming a shelter belt around fields.

Kunzea pomifera F. V. Muell. (Myrtaceæ.) Southern coast of Australia. This creeping or somewhat shrubby plant is well worth naturalization on other sandy or rocky shores in mild climates, on account of the berries, called "Muntries" by the aborigines and yielding excellent jam preserves. It occurs also in the deserts of the interior, but does not yield as succulent fruit.

Limonia acidissima Linn. (Rutaceæ.) India, up to 4,000 feet; hardy in England. This shrub or small tree has fruit of extreme acidity, but insignificant in size. Culture may enlarge it.

Marlieria glomerata Berg. (Myrtaceæ.) The "Cambuca" of sub-tropical Brazil and Guiana. The fruits attain the size of apricots and are locally much used for food.

Marliera tomentosa Cambess. Extra tropical Brazil. The "Guaparanga." The sweet berries of this tall shrub are of the size of cherries.

Melicocca bijuga Linn. (Sapindaceæ.) The Jenip. Central America on mountains. Cultivated in Jamaica up to about 3,000 feet.

Musa simiarum Kurz. (Scitamineæ.) From Malacca to the Sunda Islands. About half a hundred market varieties of this species, called Pisangs are cultivated in India, particularly on the islands. While *M. sapientum* occurs wild more frequently on the continent it never equals in delicacy the cultivated forms of *M. simiarum*, the fruit of which sometimes attains a length of two feet.

Myrica Faya Dryander and Aiton. (Myricaceæ.) Madeira, Azores and Canary Islands. A small tree. The drupaceous fruits are used for preserves.

Myrtus Cisplatensis F. V. Muell. (Myrtaceæ.) La Plata states. A middle sized tree. Berries edible.

Myrtus edulis F. V. Muell. Uruguay. A tree attaining a height of about 23 feet. Berries of 1½ inches diameter, of pleasant taste.

Myrtus incana Berg. La Plata states. A dwarf shrub. The berries can be eaten raw and are also made into sweet, rich jelly. *M. sericea* Cambess. is an allied species from the same region.

Myrtus nummularia Poiret. The Cranberry-Myrtle. From Chili to Tierra del Fuego, also in the Falkland Islands. A trailing little plant suited to turfy land in mountain regions. Hooker describes the berries as fleshy, sweet and of agreeable flavor. Allied species occur in the cold zone of the Peruvian Andes.

Myrtus Ugni Molina. The Chilian Guava. A comparatively hardy shrub, freely bearing its small, pleasantly aromatic berries.

Passiflora ligularis Jussieu (Passifloreæ.) Mexico to Bolivia; Dr. Ernst of Caracas praises its fruit highly.

Podocarpus andina Poeppig (Coniferæ.) The "Lleuque" of Chili extending to Ecquador. A stately tree with clusters of edible cherry like fruits. Stands a temperature of 0° F.

Prunus occidentalis Swartz. (Rosaceæ.) Mountains of the Antilles. A tall tree. Fruit plum like, nearly one inch long, reported to be luscious.

Prunus paniculata Thunb. (*P. Pseudo-Cerasus* Lindley.) The "Sakura" of Japan, extending to Upper India. A large shady tree, its stem attaining two feet in diameter. Fruit of the size of small cherries and of pleasant, refreshing taste though never quite sweet.

Psidium acutangulum DeCand. (Myrtaceæ.) Higher regions on the Amazon River. A tree sometimes 30 feet high. Fruit pale yellow, as large as an apple.

Psidium Araca Raddi. West Indies and Guiana to Peru and Southern Brazil: occurring in dry, high places: greenish yellow, fruit of high quality.

Psidium arboreum Vellozo. Brazil, province of Rio de Janeiro. The fruit of this plant measures about one inch and is of excellent flavor.

Psidium rufum Martius. Brazil, in the province of Minas Geraes, on sub alpine heights. This guava bush reaches a height of 10 feet and is probably the hardiest of all species producing palatable fruit.

Von Mueller names eight or ten other edible fruited species worthy of introduction.

Pyrus salicifolia Linn. (Rosaceæ.) Greece, Turkey, Persia, Southwestern Russia. Though its fruit is edible, this tree is chiefly valuable as a superior stock for the pear in hot climates.

Rhodomyrtus macrocarpa Bentham. (Myrtaceæ.) Mountains of Northeastern Queensland. A tree attaining a height of 30 feet and perhaps more. The berries, which grow to a length of 1 inch are of acidulous taste and edible.

Ribes Griffithi Hooker and Thomson. (Saxifrageæ.) This and three other species of *Ribes* are recorded by Von Mueller as worthy of testing in extra tropical regions.

Rubus acuminatus Smith. (Rosaceæ.) Indian mountains, at elevations between 4,000 and 7,000 feet. A scandent species with large fruits.

Rubus biflorus Hamilton. Indian mountains at temperate altitudes between 7,000 and 10,000 feet. A rambling shrub with sweet red or orange colored fruit. Hardy in England. Another Himalayan species, *R. macilentus* Cambess, has bright yellow fruits.

Rubus ellipticus Smith. Mountains of India from 4,000 to 7,000 feet elevation also in Ceylon and Yunan. A large, evergreen, rather erect bush with formidable prickles. It bears yellow fruits which are reckoned in odor and taste fully equal to the ordinary raspberry.

Rubus geoides Smith. Falkland Islands, Fuegia, Patagonia and Chiloe. An herbaceous raspberry with greenish yellow fruits, resembling the Cloudberry and possessing a very agreeable taste. Best adapted to mountainous regions.

Rubus glaucus Bentham. Ecuador, at high elevations. There cultivated instead of the common raspberry.

Rubus imperialis Chamisso. Brazil and Argentina. Yields superior fruits.

Rubus lasiocarpus Smith. India, reaching an elevation of 10,000 feet. Fruit very palatable. *R. opulifolius* Bartoloni is closely allied. *R. lanatus* Wallich affords edible but rather insipid fruits in Upper India.

Rubus Macraei Gray. (Rosaceæ.) Hawaii at high elevations. The "Akala." The fruit attains a diameter of nearly two inches, is dark red, very juicy and although slightly bitter, quite pleasant to the taste. Would likely improve under cultivation.

Rubus Moluccanus Linn. Continental as well as Insular India, ascending to elevations of 7,000 feet. A very tall and variable species with red fruit. A variety *R. reticulatus* Wallich ascends the Indian mountains to 10,000 feet and is remarkable for its large fruits, in warm climates ripening fruit all the year round.

Rubus nutans Wallich. Himalayan mountains to 10,000 feet elevation; grows on the ground like strawberry plants, yielding fruits of very pleasant sub-acid taste but not of large size.

Rubus parvifolius Linn. Southern Australia. It produces much finer fruit in the Alps of Australia than in the lowlands. Extends as far as Japan.

Rubus rugosus Smith. Mountainous parts of India, ascending to a considerable elevation; evergreen in mild climates. Introduced by Von Mueller to Australia where it ripens fruit all the year round near Port Phillip.

Fruit comparatively large, from dark red to black. "Jam from it is exquisite."

Vangueria infausta Burchell. (Rubiaceæ.) From tropical Asia to Natal and California. The fruit of this shrub or small tree is medlar-like but superior in taste. Worth test cultivation with a view of improving its fruit.

Vangueria edulis Vahl. From the warm regions of Africa and from Madagascar, has proved hardy in portions of Australia and yields esculent, rather small fruits.

Vitis. (Vitaceæ.) In this genus a number of species found in the mountains of tropical Asia are recorded as possessing large, edible berries. From

the nature of the climate in which they are found it is probable that they will be found better adapted to hot, wet climates than any now in cultivation.

Among these Von Mueller mentions *V. laevigata* Blume, *V. thyrsifolia* Miquel, *V. nutabalis* Blume, *V. Blumeana* Steudel, all from the mountains of Java and all producing berries as large as cherries, those of *V. Blumeana* being particularly sweet.

A tuberous species, *V. Martini* Planchon, native of Cochin China, which has herbaceous stems, annually reproduced from the roots, bears grapes all along its branches and occasionally produces more than a hundred pounds of fruit to the plant, the grapes being large and ripening successively for three months.

DISCUSSION.

Pres. Berckmans: Many of us have been interested in the investigation of these fruits in California. You know that it is my hobby and I keep a little experiment station of my own down in Georgia. Many foreign fruits have been tested in San Bernardino, and very much to my surprise, fruits that will do there at a temperature lower than 20 degrees F. will not stand that temperature with us. We have a difference in climatic conditions in these sections which makes a difference in the hardiness of fruits. There is a good experiment station at Fort Myers, Fla., in charge of W. A. Marsh. He has experimented largely and can give good information. One plant which you mention I cultivated under a different name. I sent it over to Florida for experiment and I think it will be both ornamental and useful; ornamental as a tree and as a hedge and useful because of its fruit.

Prof. Van Deman: I am proud of our own grand country and of its progress and I hope I always shall be, and we shall no doubt go on extending and improving in every department, and yet as Mr. Taylor has well said there are many things in foreign countries that we might get. We have already many things that we got from abroad among which are the Japanese plums. Japan and many other parts of the world have good fruits. Some fruits that are worthless in their native regions become valuable when introduced and cultivated in the United States. Armenia has many good fruits, such as the apricot and the fig, and we might go there for them. The cultivation of fruits is very extensive there and I was informed they were preparing to export some of their fruits. There are many good things in Armenia and northern Asia that might be got. We know the history of the Asiatic persimmons. Mr. Berckmans has some of them under cultivation now. We can get many of these species that will grow here. As to the practical application of the co-operation recently discussed, we will have to help out the government and the government will have to help the private citizens in things which they cannot do for themselves. This reminds me of a scheme that I had when I was in the government service in connection with the Secretary of Agriculture. We agreed that the government should have a foreign commission who "knew a good thing when they saw it," and that this commission should travel about and when they saw anything that was likely to prove valuable they should secure it and send it here. The government could do this if they would do it. Of course the present means at command is very small for this purpose. I have no doubt, however, that in the next few years we shall have more.

Pres. Berckmans: In regard to Armenia, an old acquaintance of mine, Mr. Niemetz, who visited this country recently, and who is, by the way, the

most advanced of any pomologist in Russia, sent me some fruit seeds from Armenia. I have grown them and the fruit has not proved good. I had from him some peaches, a lemon cling and a white freestone peach. Some of these varieties are fair but they did not seem to do good for me.

Prof. Craig: I may say that we have had the privilege of securing almost annually large collections of seeds from that dry region of Asia and my experience with them has been very similar to the experience of Mr. Berckmans. They seemed to be true species rather than horticultural varieties and while they were very interesting to the botanist they were worthless as to use. They have been evidently a great aid to botany but not to horticulture.

The following paper was read by the author:

THE PRESENT STATUS OF THE APPLE SPRAYING QUESTION.

BY PROF. W. J. GREEN, OHIO STATE AGRICULTURAL EXPERIMENT STATION, WOOSTER, OHIO.

It is now more than fifteen years since fruit growers began spraying apple orchards; first for apple worms; next to prevent the apple scab; and then to combat the two in one operation, by means of combined mixtures of insecticides and fungicides. The efficacy of combined mixtures was shown as early as 1891, and for at least four years very few raised a question as to the profitableness of the operation. Nearly all who made a test of the matter agreed that spraying was essential in orcharding. Since that time, however, there has been a division in opinion, and many have abandoned the spraying of apple orchards. It is well, therefore, to go over the ground in order to learn the cause of this change in sentiment, so as to determine what course to pursue in the future.

Have experimenters been superficial in their work, or have orchardists been too hasty in condemning and abandoning a good thing? It may not be true that apple growers in all parts of the country have given up spraying, but in Ohio comparatively few have followed the practice for the last two seasons.

In 1895 unsprayed apples were as fair as those which were sprayed. In 1896 spraying was beneficial, although few persons practiced it. There was an abundant crop without spraying, and apples were so cheap that people lost interest in them, hence orchards were neglected during the present season. Without going into all the details accessible, let us now examine the cause with sufficient fullness to see what reasons there are for a belief in the efficacy of spraying.

Soon after fungicides began to be used on apple orchards it was observed that not only were the apples saved from the apple scab, but in many cases the so-called "June drop" was prevented. It was also found that the cold northeast wind was not so disastrous to the apple crop as had been supposed. It became evident that the apple scab fungus was responsible for much of the premature dropping of apples, and that spraying with a suitable fungicide not only prevented disfigurement but often saved the crop from dropping. Observations at the Ohio Experiment Station showed that spraying saved a large share of the crop in 1891, 1892 and 1894. In 1892 there was so much rainy weather about the time of blooming that a crop

was not expected, because it was supposed that the rain had washed the pollen away. There was no crop on the unsprayed trees, but those where Bordeaux mixture was applied gave a fair crop. In other cases, which might be cited, similar results were noted.

The spring of 1895, in this State, was noted as being cool and dry. There were several frosts, and apples in many orchards were destroyed, and the scab fungus was severely checked at the same time. Those which escaped frost, were almost free from scab, and spraying was scarcely beneficial. The immense crop of 1896, without spraying, led many to believe that we were to have a return to the good old times when orchards would produce without care. There was a great deal of sooty fungus present, but no scab. Apples in many orchards were blackened as though smoked, but where sprayed were clean and bright. So little spraying was done that this did not excite attention, nor would it have been given much consideration in any case, with good apples selling at fifteen cents per bushel, and less. Thus people came to think that they might get an apple crop without spraying, and it did not matter greatly anyhow, for a crop was not worth much when they did get it.

As a result of such reasoning there is a loss of an apple crop in this state the present season, which though not large, would have been worth many thousands of dollars. This is easily demonstrated, for last year's crop was not general. Many orchards suffered from frost the year before, and this is their bearing year. It is the bearing year over a considerable portion of the state, and in many sections the trees bloomed and apples are to be seen on the trees, but all are imperfect. So far as known, there are no good apples in the state except those that have been sprayed for the scab. The loss cannot be computed, but it is safe to say that it is ten times as much as spraying would have cost. This is not all, for the trees are almost defoliated by the action of the apple scab on the leaves.

Such a sorry condition of apple trees has not been seen since 1893-4.

In the orchard belonging to the Station, which has been under experiment for five years, the unsprayed trees show no good fruit, but those which have received treatment are loaded with apples almost free from blemish. The sprayed trees in this orchard have healthy foliage, and had they no crop this year they would be in condition to form fruit buds for next season. Orchards that have been left to the action of the scab fungus have their vitality reduced to such an extent that a crop next year is doubtful. Should the trees have sufficient vitality to bloom, the crop will suffer. If the same let-alone policy is followed next year an inferior crop is the best that can be expected, and even with treatment it can hardly be a good one, for the trees need time for recuperation.

All of the facts cited go to show that the apple crop failure is largely due to the destructive action of the apple scab fungus, and that the proper use of fungicides will control it. It is true that there are other causes of failure, operating along with this, but all are not so easily controlled.

The apple worm may be mentioned as a case of the latter. It is exceedingly destructive, but much more difficult to manage than the scab. There is abundant reason for orchardists to feel discouraged in trying to control the worm of the codling moth. Two, three and even four sprayings do not always keep it in check, and we may as well own up honestly that we do not know how to deal with this insect so as to be sure of success always.

Some have thought that arsenical poisons are less efficient with Bordeaux mixture than alone, but such does not seem to be the fact. Others have laid the blame to adulterated Paris green, but it is probable that we must seek some other explanation of the fact that apples are often wormy in spite of our best efforts. Often we succeed in keeping our apples comparatively free from worms, but not always, and I firmly believe that we need more knowledge regarding the habit of the codling moth before we can fight it successfully.

Many orchardists are of the opinion that there is no use in trying to fight it, and do not try. Others keep on trying, but are not sure that it pays to do so, while those who have full faith in the result of their efforts against it are in the minority.

The case of the canker worm is similar, but few being successful in combating it. My own experience leads me to think that the trouble here lies in lack of thoroughness, and especially in beginning operations too late in the season. If taken in time and combated vigorously it is not difficult to control. The above review of the present status of apple spraying may appear to be somewhat gloomy, but I have tried to present the facts as I find them in this state.

So far as the outlook for a general good crop of apples is concerned it is gloomy. We may have occasional crops, but they will be as rare as in the past. The day of good crops of fair apples, without effort, is forever gone, unless conditions change greatly, but the prospects were never brighter for the painstaking, thorough orchardist.

If any one needs a full, conclusive and final demonstration that spraying is a necessary part of apple culture let him look at almost any unsprayed orchard in the state; then compare it with any sprayed orchard which he may find. If he does not see the difference, if he cannot find evidence that spraying has paid 500 to 1000 per cent, it will be because he is not open to conviction.

In my own experience of seven years, in the use of combined mixtures, spraying has always paid in preventing blemishes on the fruit, or in keeping the foliage healthy.

One season it did not appear to benefit the fruit to any great extent, and yet the work was not wholly lost, even then. If the cost for the entire period were assessed against the crop of the present season there would still be a balance of profit. This season's profit on the Experiment Station orchard would pay for ten years' spraying. This is an extreme case, but others nearly similar in other years can be cited.

I will conclude by saying that, although apple orchards are not generally sprayed, because of the common belief that the operation does not pay, now is the opportunity for professional orchardists. It is almost certain that they are the only ones that will spray regularly. They cannot afford to omit it a single season, nor to do any other than thorough work. The evidence all points in this direction.

Although the present status of apple spraying is far from satisfactory, as regards the practice of the general public, those who make apple growing a business have little of which to complain.

In some respects there is need of improvement in methods, but even with our present knowledge we have reason to be thankful that our efforts to control the enemies of the apple are measurably successful.

DISCUSSION.

Prof. Alwood: I want to relate a few instances that came under my own observation. In 1889 a large orchard of Winesap, most admirably arranged and most excellently situated, which had stood for fifteen years without bearing a profitable crop came to my attention. The owner was about to cut them down and I asked to be allowed to treat it for one year. The owner agreed that I was to direct the work. The orchard was treated by spraying with concentrated lye in the winter, followed in spring by spraying with a weak solution of lye. The result was that the first year we had fifty per cent of a crop of fine apples and it was found that they kept better than unsprayed apples. I have now under my direction an orchard of thirty acres of Winesap which has become unproductive. The question was, lack of fertility in the soil or what? I thought of several things, but what I thought most likely to be the trouble was scab. I recommended several things, but the chief thing I recommended was spraying with concentrated lye in the winter. The spraying was done very thoroughly. I visited the orchard the other day and I find from thirty to fifty per cent of a crop and the apples are perfect. There is scarcely a knotty apple and the fruit is perfect and the foliage is good. I have in mind another orchard near Winchester where the owner has been spraying for years, although he sprays in a very careless way, many of the trees receiving very little if any spraying, and in fact it is altogether a very poor job of work, yet he treats his orchard in this way and gets fairly good results, but his apples are from twenty-five to thirty per cent seriously specked with scab. Where I have been doing this work we have less than two per cent that are specked. By spraying with a wash of lye in the winter we are able to save our crop and not lose two per cent. This orchard of forty acres yielded its purchaser over *forty thousand* dollars.

Mr. McPike: This matter of spraying has been before our Society at Alton. We grow fruit but we have no great pride in making statements as to what is the right thing to do. In furtherance of the proposition that spraying is valuable, I will say that we got our best results from using lime. We have used it in an air slaked condition in spraying the trees. The trouble that we have experienced is in determining the time of year to spray each kind of fruit. We spray and have a great crop of apples this year, but in Calhoun county they cannot spray to advantage as the ground is very rolling, and yet they have a magnificent crop of Janets [Ralls Genet], and they do no spraying. They have been doing this for years, so that their apples are known in the market. When to spray, as well as how to spray and what to spray, are important matters. Some people spray their peach trees and destroy their orchards. Our experience is that you do not want to touch your peach trees. We spray our grapes. We get good results in everything but the peach.

L. A. Goodman: We have been spraying in Missouri for years. Sometimes we think we get good results and sometimes we think we get none. I have done it every year whether the apple trees were full or not. In regard to the idea of when, what, and how to spray I do not believe we understand that yet. I am ready to state that if we could understand the conditions of climate and the atmosphere then I believe we could reach the desired result. Sometimes we have wonderful success and we jump at conclusions and we think that was all right. The next year we find that

it was all wrong. Now as to sprayers I think that sometimes the air chambers are too small. We use a large air chamber that will hold thirty gallons and that will work right. We can stop under a tree and spray it thoroughly. While I like to hear these questions discussed I am not certain that we understand them.

Prof. Green: I do not want to be understood that we are always successful. Of course we understand that where we are not absolutely successful the result is still interesting.

Mr. Freeman: I have watched the methods of Prof. Green at the Experiment Station for the past two years. I have sprayed my trees sometimes with good success and sometimes I have been discouraged. This year it is discouraging. The last spraying gave me a good crop. We have been spraying for the black scab and the canker worm and we have driven them out. I have not one among my two thousand trees. Last year I had the black scab and I sprayed the trees and stopped this black scab.

Prof. Lazenby: If it is in order I would like to make an announcement. We have been treated very nicely by the city press. The *Dispatch* has a full account of the proceedings and will furnish papers for mailing to your homes.

Dr. Hexamer urged upon the state delegations the importance of promptly selecting their members of the Nominating Committee in order that the Committee might transact its business and be ready to report at the opening of the afternoon session.

Upon motion the society adjourned, to meet at 2 P. M.

THURSDAY AFTERNOON SESSION.

Thursday, Sept. 2, 1898.

ELECTION OF OFFICERS.

The meeting was called to order by President Berckmans at 2:25 P. M. The Committee on Nominations reported as follows:

REPORT OF COMMITTEE ON NOMINATIONS.

Dr. Hexamer, Chairman of Committee on Nominations— Gentlemen: Your Committee on Nominations was found to be composed of the following gentlemen selected by their respective delegations:

Arkansas, Jno. T. Stinson; District of Columbia, Wm. A. Taylor; Georgia, G. H. Miller; Illinois, Jonathan Periam; Indiana, James Troop; Iowa, G. B. Brackett; Kentucky, J. A. Ream; Massachusetts, J. W. Manning; Michigan, L. R. Taft; Missouri, L. A. Goodman; New York, F. M. Hexamer; North Carolina, J. Van Lindley; Ohio, G. W. Campbell; Ontario, Jno. Craig; Virginia, Wm. B. Alwood.

The Committee regrets the declination of President Berckmans to serve another term and has directed a sub-committee to prepare a resolution to that effect, which will be presented later. We desire to say that we have always found him willing and ready to perform his duties during the past ten years and that we regret that he feels that he must decline to serve longer.

Your Committee submits the following nominations:

For President, Chas. L. Watrous, Iowa.

For Vice-President, Geo. W. Campbell, Ohio.

For Vice-Presidents for the States represented on the Committee:

Arkansas, W. G. Vincenheller; District of Columbia, Wm. Saunders; Georgia, P. J. A. Berckmans, Jr.; Illinois, H. G. McPike; Indiana, Sylvester Johnson; Iowa, Silas Wilson; Kentucky, A. D. Webb; Massachusetts, Wm. C. Strong; Michigan, T. T. Lyon; Missouri, Wm. Trelease; New York, F. M. Hexamer; Ohio, J. J. Harrison; Ontario, Linus Woolverton; Virginia, H. E. Van Deman.

For Secretary, Wm. A. Taylor, District of Columbia.

For Treasurer, L. R. Taft, Michigan.

Upon motion duly seconded the Secretary was instructed to cast the ballot of the Society for the persons named in the report of the Committee, who were thereupon declared duly elected to the several offices for which they had been nominated.

The representative of the Kansas delegation not having been present during the session of the Committee on Nominations, it was moved and seconded that Mr. Wm. H. Barnes be designated Vice-President of the Society for that state. Carried.

Pres. Berckmans: Gentlemen, I take great pleasure in introducing your new President. I want to say that our relations have been very cordial during my term of office and I know that you will give your new President the same cordial support you gave me.

President-Elect Watrous: Gentlemen: After first thanking you for the honor conferred, permit me to say that I did not expect this office and if the matter had been left to me I should not now be your President-elect. Yet I would rather be able to carry on successfully the work of this American Pomological Society and to add to its usefulness, than to conquer a province, because I believe that the work of this Society deals profoundly with the future welfare of our people. In some ways this nation has a more progressive and a higher order of civilization than any other. It cannot be doubted that a part of this high standing is due to the food our people eat, its abundance and its high quality. I am told that the people of this nation have a better selection and a greater abundance of fruits and that they enter more largely into the daily food of all of us, poor and rich, than is the case with any other civilized men. You all know how profoundly life is affected by nutrition.

The work of this Society has been powerful in bringing about this abundance and variety of fine fruits. I shall enter upon this work with a deep sense of the responsibility which it brings and know that, alone, I can do but little, but if you all give your full support I know that success must go with us.

What is your pleasure?

First Vice-Pres. Campbell: Gentlemen: I wish to say that I thank you most sincerely for the unexpected honor you have conferred upon me in making me your First Vice-President. I did not expect anything of the kind, but I assure you that I appreciate the honor for I feel it a great honor indeed. I shall fill the position to the best of my ability though I feel that you might have done better by selecting another man. I thank you again for the honor and promise you my best efforts.

REPORT OF COMMITTEE ON NATIVE FRUITS.

Dr. Hexamer: As Chairman of your Committee on Native Fruits I would submit the following reports. In addition to the several reports of members I desire to report on the Loganberry, which is of very little commercial value with me, but is good for the garden. It is a hybrid between the raspberry and the blackberry. It is not good for the market because it is too soft, but it is a good fruit for stewing.

EASTERN DIVISION.

BY J. W. MANNING, READING, MASS.

The apple crop of this year (1897) is below the average of short crops. The contrast with the superabundance of last year is striking. An observing neighbor of mine who had spent 50 years in Faneuil Hall Market, Boston, remarked that it was a calamity to have such an excessive crop of apples as in 1896.

The sale of all fruit grown in New England is greatly curtailed by foreign or more tropical fruits as well as the fruits of more southern states and California.

Among the promising early winter apples brought to test and found desirable is McIntosh Red.

The crop of pears will be very abundant in the Eastern states and of excellent quality.

The plum crop is unusually abundant; the older varieties, well known a generation ago, maintain their standard of superiority and quality. The Japan plums prove good bearers. No plum known is so fruitful as the Abundance.

Peaches are fruiting this year more than for several years past; this will stimulate more planting of peach orchards.

The quince is not a prominent fruit in Massachusetts, but well managed trees are fruiting reasonably.

The strawberry crop was not as large as usual, but the exhibition tables of the Massachusetts Horticultural Society were well covered with well grown fruit.

The currant and gooseberry crop was ample and prices low.

Grape culture in Massachusetts is losing the prestige of former years. The avalanche of superior fruit in convenient packages at low prices has a tendency to disgust growers in the East.

NORTHERN DIVISION.

BY CHAS. A. GREEN, ROCHESTER, N. Y.

It requires much time to test the larger fruits and it is impossible to make a full report on them. New apples, pears, plums and quinces are not so widely disseminated, as a rule, as smaller fruits. Small fruits can be sent by mail, and can be easily propagated, are inexpensive, hence they are scattered over the entire continent, whereas a new pear or apple may be

confined to a more limited range unless it should be found to possess remarkable characteristics. The large fruits are also more especially adapted for localities than small fruits. There are strawberries which will succeed almost anywhere in this country, but there is no apple which will succeed everywhere.

There is no dearth of new varieties of all the various species of fruits. Indeed, new apples, new peaches and new strawberries are so frequently offered to nurserymen and others as to attract but little attention, unless of marked peculiarities. The last report of the United States Pomologist mentions a long list of new apples, which have been found of value in certain localities, but I know of nothing along this line of particular interest to warrant its being selected from out of the mass of new apples. To illustrate how easily new varieties of apples are produced, I mention the fact that at our Western New York Horticultural Meeting there were exhibited fifty or more varieties which sprang up accidentally in a field where apple pomace had been fed to cattle. These varieties were all handsome and many of them of fine quality and large size.

BISMARCK APPLE.

Perhaps no new apple has attracted more attention than the Bismarck, coming to us from Europe with the claim that it bears immense crops on very small trees, not over three or four feet high. This is a large, yellow apple, about which very little is known in this country. It is a slow growing tree, but healthy and apparently hardy in New York. It is not an apple of high quality, but beautiful, of large size and valued for cooking. The tree presents something the appearance of Yellow Transparent, but is even more dwarfish than that variety.

NEW PEARS.

The public seems to be slow in adopting new varieties of pears into the large family of varieties which have proved valuable. It is some years since Clapp's new seedlings, Idaho, Lincoln Coreless, Fitzwater, Vermont Beauty and Wilder were introduced, but none of these varieties seem to be widely disseminated, or widely known. Idaho, which created a furore when first introduced, has been dropped like a hot cake, but for what reason I do not know. Yesterday I saw it in bearing at our fruit farm. It was of large size, somewhat irregular and knotty in form, but of good quality and beyond doubt a good pear; season late fall. Lucy Duke is a pear which has been known many years in North Carolina; a valuable variety, late Fall, but of straggling and tortuous growth. It would seem that no variety can be of great success unless it is a fair grower. Koonce is early, but of poor quality. Garber is much like Kieffer.

NEW PLUMS.

The introduction of Japan plums is an event in the history of American horticulture. Here is a new species of plum differing entirely from the European or the native American varieties. It resembles the American native plum more than the European. Its foliage is entirely distinct and it holds its foliage late in the Fall, while the European plum often drops its foliage in midsummer. Nearly all the Japanese plums are clingstones, but nearly all are possessed of great beauty. Some of the Botans resemble crab

apples in appearance. Burbank appears to be the most valuable and the largest of those we have tested. Before maturity it is a bright yellow, tinged with carmine, but as it becomes dead ripe returns to the purplish hue. This is not only valuable for eating out of the hand, but it is considered the very best for canning purposes. Abundance, ripening Sept. 1st, just before Burbank, is the most widely known of the Japan plums. The fruit is smaller than Burbank, and lighter in color; otherwise quite similar to Burbank. When first introduced it was supposed that the Japan plums were not handly except for New York state, Ohio, Pennsylvania and similar latitudes, but they have been found hardy in Iowa, and in many states where it was supposed they could not be grown. The Japan plums bear at a very early age, are immensely productive, and are not so liable to be damaged by curculio as are other plums. There is no doubt in my mind that an epoch in plum growing has been introduced with these Japan varieties. There are many seedlings originated by Luther Burbank, of California, which are yet to be tested, but which give promise of great excellence. Plums are grown in great profusion in New York State, although twenty years ago plum culture had been given up entirely on account of the curculio.

NEW CHERRIES.

The most successful new cherries come to us from California, where cherry culture receives far greater attention than anywhere else in this country. California has a man who has spent his life in experimenting with new cherries, and he has been remarkably successful, producing the Centennial and several other varieties similar to Black Tartarian and Napoleon, but superior to those well known varieties. Black Tartarian, Windsor, Napoleon and Montmorency are the four great cherries for New York state. Cherry culture is receiving more attention than ever before. The California methods of packing and marketing are being introduced.

NEW PEACHES.

Elberta has created a greater sensation in new peaches than any variety in recent years. While not of the largest size or the finest quality, it is of good size, attractive in appearance and of fair quality. Although it originated in Georgia, it seems to be hardy and produces crops more frequently than many other well known varieties. It endures shipment well. Crosby proves to be similar to Hill's Chili. It is hardy, but of small size, unless carefully thinned. It is hardly carrying out the early expectations of its friends. Triumph and Greensboro are two new early peaches of great promise. Triumph is a yellow peach, ripening with Alexander; better quality than Alexander, not so liable to rot, but still a clingstone, but perhaps not clinging so closely as Alexander. Greensboro ripens with Alexander, and looks much like the Oldmixon freestone. There is room for an early freestone peach, or even for a clingstone of good quality, and such a variety has often been sought. Possibly we have it in one of these.

APRICOT CULTURE.

Apricots are being planted successfully in Western New York, where they are bearing profusely, and perhaps profitably. Apricot culture had previously been entirely given up, except that occasionally here and there a tree was

growing in some village garden, and bearing more often than the peach. A lady fruit grower, near Rochester, had eight hundred of Russian apricot trees heavily laden with fruit the past season. While Russian apricots are small in size they are fairly good in quality, and this lady had a profitable demand for all of her apricots. Near Geneva are large orchards of large and superior varieties, among which are the Harris, a superior apricot of rather straggling growth in the nursery.

NEW STRAWBERRIES.

William Belt, Bismarck, Brandywine and Marshall are four prominent new varieties.

NEW RASPBERRIES.

Loudon, Miller and Columbian are three prominent new raspberries. London ripens about the same time as Cuthbert. It is an improvement on Cuthbert in every way, but of more dwarfish growth. It is a valuable market variety, more hardy than Cuthbert. Miller is doubtless the best early red raspberry. Columbian is more vigorous and productive, and a little larger than Shaffer, but not of so good quality. It may be a little hardier than Shaffer. There are hundreds of new varieties of black raspberries, among the best of which are the Kansas, Nemaha and Conrath. The "Strawberry-raspberry" is of no value except as a queer thing.

NEW BLACKBERRIES.

Minnewaska and Eldorado are the most valuable of the new varieties that I have tested. These are both hardy here, of large size and good quality. Rathbun is a new variety of large size, something of a cross between the dewberry and upright growing varieties. It seems to be a valuable variety but is not yet well tested. All tree blackberries seem to be trees only in name, since it is impossible to make a tree of any cane which dies at the end of its fruiting season. The Logan blackberry-raspberry, so-called, I do not consider of any value except as a novelty.

GOOSEBERRIES.

Gooseberry culture is receiving an impulse owing to the fact that foreign varieties can be grown in many localities without mildew. I can grow them at my Rochester place and at our fruit farm, twelve miles out of Rochester, without any imperfections or any indication of mildew whatever without spraying. Industry and Keepsake seem to be the favorites of the English varieties. Chautauqua is also a valuable variety closely resembling the English; beautiful yellow, large size, fine quality. Pearl and Red Jacket are favorites of new native gooseberries.

NEW CURRANTS.

Until recently a new currant has been a novelty in this country. Now there are numerous new varieties being offered, among them Pomona, Wilder and Red Cross. I know of several others which have not yet been tested, but which are promising, therefore we are not likely to be short of large new currants. Pomona seems to have been planted largely through the West. It is of moderate size, very vigorous and productive. Wilder is a large currant, of good quality and very productive. The veteran, Jacob Moore,

originator of the Brighton Grape, etc., has for many years been patiently crossing the best varieties in attempts to improve the currant. Out of the many thousand seedlings he has selected a dozen or more varieties of promise, all of which were exhibited at the World's Fair, and received an award of merit. He selected one among the number which he considered as the best, which has been named Red Cross and disseminated under that title. The peculiarities of this variety are that the bush is very vigorous and upright in growth, the berries very large and the clusters of fruit very long, often five or six inches in length, as grown at Rochester. The fruit stem is long, enabling the picker to gather the fruit with ease. The tendency of the currant is to produce in bunches, which also makes the picking easy. The currant is also less acid than most varieties. Fay Prolific continues to be grown and is a popular variety. North Star is not much larger than Victoria; not large enough. We shall discard Victoria, Red Dutch and other small currants owing to the new varieties coming in, which are more valuable.

CHAS. A. GREEN, Rochester, N. Y.

MIDDLE DIVISION.

BY WM. A. TAYLOR, WASHINGTON, D. C.

Washington, D. C., August 18, 1897.

Dr. F. M. Hexamer, Chairman Committee on Native Fruits:

Dear Sir—As member of the committee on Native Fruits for the Middle section, I forward herewith descriptions of promising varieties that have come to notice since the last meeting of the Society.

Respectfully,

WM. A. TAYLOR.

DESCRIPTIONS OF NEW VARIETIES.

APPLES.

Abernathy. (W. E. Crawford, Dunlapsville, Ind.) Originated in one of the first orchards in Union Co., Ind., about 100 years ago. Roundish conical; above medium in size; greenish yellow, nearly covered with red; flesh fine grained, tender, juicy; sub-acid, sprightly; very good; autumn. Tree upright, spreading, long lived, hardy.

Allison—Syn. *Jones Seedling.* (William Hy. Smith, Leiper's Fork, Tenn.) Origin Williamson Co., Tenn. Tree a moderate grower, hardy and productive. Roundish oblate, slightly conical and slightly unequal; large; moderately smooth, yellow, washed with pale red; flesh yellow, moderately fine grained; firm, crisp, juicy; very good; winter.

Alpine—Syn. *Alpine Crab.* (Prof. R. L. Watts, Knoxville, Tenn.) Grown by D. C. Swadley, Johnson City, Tenn. Oblate; small to medium; moderately smooth, yellow, washed with red and striped with darker red; flesh yellowish, fine grained, breaking, juicy; mild sub-acid, rich; good to very good; winter.

Armintrout. A. Bolen, Kimball, Va.) A seedling, first noticed in 1873 on the Blue Ridge Mountains in Virginia. Tree a slow grower, but an annual bearer, holding its fruit well. Oblate, slightly conic; of medium size; moderately smooth, lemon yellow, washed and striped with red; skin thin, tough; flesh fine grained, moderately tender, juicy, sub-acid, rich, very good; October to March.

Banana—Syn. *Winter Banana.* (Prof. W. J. Green, Wooster, Ohio, and Messrs. Greening Bros., Monroe, Mich.) Said to have originated on the farm of David Flory, near Adamsboro, Ind. Tree reported to be an early bearer, vigorous and quite hardy. Oblate, slightly unequal; of medium size; yellow with blush of pale red on exposed side; flesh yellowish, moderately fine, tender, juicy, mild sub-acid, aromatic, good to very good; winter.

Banner. (D. J. Piper, Forreston, Ill.) A seedling of medium size, roundish; yellow, washed, splashed and striped with mixed red; quality good; season early summer.

Baptist. (The late W. M. Samuels, Clinton, Ky.) Globular oblate; regular; of medium size, smooth; maroon over entire surface; skin thick; flesh moderately fine grained; mild sub-acid; good.

Barcroft. (Gerard C. Brown, Yorkana, Pa.) A chance seedling originated by Senator Brown, which resembles Lady in form and flavor, but is larger and more highly colored. Quality good; season winter.

Benninger. (W. M. Benninger, Walnutport, Pa.) Originated on the Benninger farm in Lehigh County, Pa., about 50 years ago. Medium to large; yellow, washed with red and striped with crimson; flesh yellowish, fine grained, tender, juicy; sub-acid, pleasant, good; season autumn.

Berry Red. (W. L. Morgan, Cains Store, Ky.) Found in old orchards in Pulaski County and highly valued there. Large, roundish oblate, red, with indistinct stripes of darker red. Quality very good, season winter. A promising market variety.

Bloomfield—Syn. *Bentley Seedling.* (John C. Bentley, Sandy Spring, Md.) A chance seedling on Mr. Bentley's farm in Montgomery Co., Md., that fruited first in 1880 and is now found in many orchards of that vicinity. Large, roundish; yellowish mostly covered with red, overspread with gray; flesh yellow, tender; sub-acid, rich, good to very good; season early autumn.

Breckinridge. (Prof. R. L. Watts, Knoxville, Tenn.) Roundish truncate, unequal, ribbed, of medium size; surface moderately smooth, somewhat undulating; skin thin, tender, juicy; sub-acid; good to very good; September.

Candy. (Prof. R. L. Watts, Knoxville, Tenn.) Grown by D. C. Swadley, Johnson City, Tenn. Roundish; small; surface moderately smooth; creamy white washed with red and splashed and striped with crimson; flesh whitish tinged with red, fine grained, firm, juicy; sub-acid, sprightly; good to very good; autumn.

Carolina Beauty. (J. Van Lindley, Pomona, N. C.) Oblate, slightly conic; large; smooth except numerous russet knobs; yellow, washed over most of the surface with crimson and moderately striped with darker crimson; flesh yellowish, moderately fine grained; crisp, juicy, sub-acid; very good; early winter.

Cochran. (Prof. R. L. Watts, Knoxville, Tenn.) Grown by Samuel Dunlap, Friendsville, Tenn. Roundish conical, slightly oblique; large; moderately smooth; rich golden yellow, somewhat russeted; skin thin, tender; flesh yellow, moderately fine grained, crisp, tender, juicy; sub-acid, rich, very good; season August and September.

Coffman—Syn. *Summer Red.* (B. A. Craddock & Co., Curve, Tenn.) Long grown in Lauderdale County, Tenn., from sprouts. An apple of the Red June type ripening at about the same time as that variety.

Competitor. (E. N. Sword, Chandler, Va.) A chance seedling which fruited first in 1893. A large striped apple resembling McAfee; good to very good in quality; season early winter in southwestern Virginia.

Corp Choice. (Henry Sillery, McConnellsville, Ohio.) Originated by George Corp of Washington Co., Ohio. Size medium; roundish truncate; smooth, greenish yellow washed and splashed with mixed red and purple and striped with dark crimson; flesh yellow, moderately fine grained, tender, moderately juicy; mild sub-acid, sprightly, very good; winter.

Cresswell. (Edward Yenowine, Edwardsville, Ind.) Origin unknown, but grown in the neighborhood of Edwardsville, Ind., since the early part of the century. One orchard almost entirely of this variety is reported to be 50 years old and still bearing good crops. Roundish conical; large; varying in color from bright red to yellow striped with red; flesh yellowish, coarse grained, tender, juicy; sub-acid; good to very good; early autumn.

Dabney. (Prof. R. L. Watts, Knoxville, Tenn.) Grown by S. H. Stepp, Dry Creek, Tenn. Roundish oblate, some specimens slightly oblique; large, moderately smooth; greenish yellow, washed with red, striped with crimson and overspread with gray; flesh yellowish, satiny, moderately fine grained, tender, juicy; sub-acid, rich, sprightly, very good; September.

Dallas—Syn. *Mrs. Dallas.* (M. K. Nolin, Parker, Kans.) Originated in Linn Co., Kansas, and named in 1889 by the Kansas Hort. Society. Roundish oblate, slightly conical, unequal, of medium size; moderately smooth with some russet patches and knobs; yellow, washed with red and splashed with crimson; flesh yellowish, satiny, moderately fine; sub-acid, good, an excellent keeper; season late winter.

Deaderick. (Prof. R. L. Watts, Knoxville, Tenn.) Originated in Washington Co., Tenn. Roundish conical, unequal; large, smooth; lemon yellow; skin moderately thick, tough; flesh yellow, moderately juicy; sub-acid; good; winter.

Dixon. (C. S. Scott, Sinks Grove, W. Va.) Prolate, slightly oblique, ribbed; large, smooth; yellow, washed with red and striped with crimson; flesh yellowish, slightly tinged with red near skin; tender, juicy, sub-acid, good; early winter.

Elstun. (Freeman Elstun, Milroy, Ind.) Oval; large; moderately smooth; pale lemon yellow, occasionally blushed and often russeted; flesh yellowish, fine grained, tender, juicy, sweet; good to very good; autumn and early winter.

Fall Gem. (Jno. N. Cheney, Sidell, Ill.) A seedling found in a fence corner about 1878. Roundish oblate, size above medium; surface smooth with a few russet knobs; yellowish white, washed, shaded and splashed with crimson; flesh whitish, tinged with red, fine grained, tender, juicy; sub-acid, sprightly; very good; autumn.

Frankiana. (The late Henry Shimer, Mount Carroll, Ill.) A chance seedling found in a fence row. Roundish conic; large; surface moderately smooth with occasional patches of russet netting; yellow washed with dull mixed red and striped with crimson; flesh yellowish, moderately fine grained, tender, moderately juicy; very mild sub-acid or sweet; very good; early winter.

Garst. (Prof. R. L. Watts, Knoxville, Tenn.) Grown by Prof. T. C. Garst, Blizzard, Tenn. Roundish oblate; large; yellow, washed and mottled with crimson; sub-acid; good to very good; season summer.

Gem *Sweet.* (C. S. Scott, Sinks Grove, W. Va.) The original tree, more than 50 years old, is a vigorous, though slender and willowy grower and very productive, holding its fruit well until ripe. Roundish conical; large, moderately smooth, somewhat russeted; greenish yellow, washed with dull red and striped with crimson; flesh yellowish, moderately fine grained, tender, juicy, sweet, rich, good; August and September.

Gerard. (Gerard C. Brown, Yorkana, Pa.) A seedling about 15 years old. Oblate, slightly conic, unequal; large; yellow, washed with red and striped with crimson, having prominent dots with dark centers; flesh yellowish, crisp, juicy; sub-acid, rich; very good; autumn.

Glenville. (T. H. West, Glenville, W. Va.) A seedling sweet apple of very high quality, which fruited in 1895 at four years of age; season autumn.

Godbey. (W. E. Jones & Son, Lincoln, Ill.) Prolate; large; surface smooth, though somewhat undulating; yellow, washed with red and richly striped with purplish crimson; flesh yellowish, crisp, juicy; sub-acid, rich; very good; autumn.

Goode. (A. Branson, New Sharon, Ia.) Originated by Mrs. Goode. Roundish; large; yellowish; sub-acid; good; season late winter, keeping until July or August.

Great Bearer. (Henry S. Rupp, Shiremanstown, Pa.) Oblate, slightly conic; small; smooth, with occasional russet knobs; yellowish, washed with red over entire surface and dark purplish red on the exposed side; flesh yellowish, firm, tender, fine grained, moderately juicy; mild sub-acid; good; winter. Highly prized as a cider apple in York Co., Pa.

Gregg. (Warren C. Gregg, Pennville, Ind.) Oblate; large; surface moderately smooth; greenish yellow, lightly washed with dull red and striped with darker red; flesh yellowish, moderately coarse, tender, juicy; brisk sub-acid, sprightly; very good; autumn.

Hackman. (S. M. Irwin, Geneva, Kans.) A sprout from the stock on which a Stark scion was grafted. The tree resembles Ralls (Genet) in form and habit of growth. It is productive, but is inclined to drop its fruit in September before its proper ripening season. Oblate, slightly conic, unequal; of medium size, moderately smooth, having some russet patches, knobs and dots; skin thin, tender; flesh yellowish white, moderately fine grained, very tender, juicy; sub-acid, rich; very good to best; autumn.

Hargrove. (George E. Boggs, Waynesville, N. C.) Roundish, regular; size above medium; smooth yellow, with a crimson bronzed blush on exposed side; flesh yellowish white, fine grained, breaking, juicy; sub-acid; good to very good; winter.

Harrah—Syn. *Billic's Favorite.* (A. Bolen, Kimball, Va.) An accidental seedling originated about 1882 near Thornton's Gap, Virginia. Tree reported to be a rapid grower, with large, glossy leaves, making a spreading top. Oblate, conical, unequal; large; smooth, except for russet dots; yellow, washed with crimson, striped with dark crimson and overspread with gray; flesh yellowish white, very tender, juicy; sub-acid, pleasant; very good; September to March.

Harwell. (Prof. R. L. Watts, Knoxville, Tenn.) Grown by S. A. R. Swan, Pulaski, Tenn. Oblate, unequal; large; moderately smooth, having some russet patches; pale yellowish green, with a few dull red stripes; flesh greenish yellow, moderately fine grained, crisp, juicy; sub-acid; good; winter.

Hastings. (Geo. M. Hudson, Shults, Mich.) Original tree found when small, some years ago near a stump on the Hudson farm. Roundish, ribbed; large; yellow, washed with bright crimson; mild sub-acid; good; winter.

Hedrick Sweet. (C. S. Scott, Sinks Grove, W. Va.) Originated in Greenbrier Co., W. Va., about the beginning of the present century; grown in large quantities and highly prized in the vicinity of Sinks Grove, W. Va. Oblate, slightly conical; of medium size; surface smooth; pale yellow, washed with bronze red; skin moderately thick, tough; flesh yellowish, fine grained, tender, moderately juicy; sweet, rich; very good; winter.

Honest John. (A. Bolen, Kimball, Va.) A seedling near Brahm's Gap, on the east side of the Blue Ridge; first noticed in 1865. Oblate, conical; size above medium; moderately smooth; yellow, washed with mixed red, splashed and striped with crimson; flesh yellowish, fine grained, crisp, juicy; mild subacid, rich; good to very good; late winter.

Hopewell—Syn. *Patterson.* (J. G. Patterson, Stewartstown, Pa.) Oblate, conical, somewhat unequal; small; smooth for a russet; golden yellow, overspread with fine netted russet; flesh yellowish, moderately fine grained, firm, juicy; very mild sub-acid; very good; late winter.

Hyder *Sweet.* (Prof. R. L. Watts, Knoxville, Tenn.) Grown by F. N. Hyder, Gap Run, Tenn. Roundish conical unequal; above medium size; surface smooth; yellow, washed with light red and slightly striped with crimson; flesh yellow, fine grained, crisp, juicy, sweet, rich; very good; autumn.

Idura. (George Hall, Champaign, Ill.) Grown from seed planted at Savoy, Ill., by Dr. Lyman Hall. Roundish conical; of medium size; surface moderately smooth; yellow, washed, splashed and striped with red; flesh yellowish, moderately fine grained, moderately tender, juicy; flavor sweet, rich; good to very good; September, October.

Ironclad. (E. H. Cochlin, Bowmansdale, Pa.) Originated as an accidental seedling on the grounds of Mr. Cochlin about 1865. Tree hardy and a regular, early bearer; fruit and leaves hang late on the tree; crop heavier in alternate years. Oblate, roundish, unequal; size medium; surface very smooth, polished; greenish yellow, washed with carmine and splashed and striped with crimson; flesh greenish yellow, moderately fine; moderately juicy; sub-acid, aromatic; good to very good; winter.

Ishmaelite. (E. A. Riehl, Alton, Ill.) Reported to have originated in Washington County, Mo. Size above medium; oblate, oblique, conic; greenish yellow, with dull bronze blush; quality good; season winter.

Keeper. (Remer Bros., Aulne, Kans.) Originated in Marion Co., Kansas. Roundish oblong, regular; size medium; smooth; skin moderately thick, tough; flesh yellow, fine grained, breaking, juicy; mild sub-acid, rich; very good; late winter and spring.

Keicher. (Prof. R. L. Watts, Knoxville, Tenn.) Originated at Pleasant Garden, Tenn. Roundish conical; small; smooth; greenish yellow, with dull red striping; flesh yellow, firm, moderately fine grained; mild sub-acid; good; autumn.

Kimball—Syn. *Dr. Dunn's Sweeting.* (A. Bolen, Kimball, Va.) Originated about 1860 near Brahm's Gap, on the east side of the Blue Ridge Mountains. Roundish oblate, slightly conical; of medium size; surface moderately smooth; color greenish yellow, washed with red, splashed and striped with darker red; flesh whitish, fine grained, crisp, moderately juicy; flavor sweetish; very good; winter.

Kerr *Greening.* (J. W. Kerr, Denton, Md.) Original tree found in a thicket by Mr. Kerr. Fruit resembles Green Vandevere of Pennsylvania. Flat, regular; of medium size; surface somewhat roughened by russet; skin thick, brittle; greenish white, with red blush; flesh yellowish white, very

firm, breaking; sub-acid; good; season spring. Promising for the Chesapeake Peninsula on account of its excellent keeping quality.

Langdon. (Prof. R. L. Watts, Knoxville, Tenn.) Grown by R. J. White, Sewanee, Tenn. Roundish oblate; large; smooth; yellow; skin moderately thick, tender; flesh yellowish; fine grained, tender, juicy; sub-acid; good.

Linn. (M. K. Nolin, Parker, Kans.) Origin Linn County, Kansas. Named in 1889 by the Kansas Horticultural Society. Roundish conical, slightly unequal; medium to large; moderately smooth, with some erupted dots; greenish yellow, washed with pale red, striped with crimson, some specimens heavily overspread with gray; flesh yellowish, satiny, moderately juicy; sub-acid; good; late winter.

Longevity. (H. C. Graves, St. Joseph, Mo.) Roundish conical, slightly ribbed; above medium in size; yellow, washed with mixed light red and splashed with crimson; dots numerous, yellow; sub-acid; good; late winter. Resembles Cooper Market.

McCroskey. (Prof. R. L. Watts, Knoxville, Tenn.) A seedling on farm of H. M. McCroskey, Glenloch, Tenn. Roundish truncate; medium; yellow, washed with light and dark red; mild sub-acid; good; winter.

McMillin—Syn. *McKinley's Green.* (R. B. McKinley, Pekin, Tenn.) Received also from Prof. R. L. Watts, who reports its origin as supposed to be Putnam County, Tenn. Globular, unequal; large; smooth; greenish yellow, with a suggestion of blush on exposed side; skin thick, tough; flesh greenish yellow, moderately coarse, tender, juicy; sub-acid; good; winter.

Mabel. (Joseph Husband, Leanderville, Ill.) A seedling of Winesap. Oblate; large; yellowish green, washed with mixed red; moderately juicy, sweet, sugary; very good; season end of July.

Maloney. (Prof. R. L. Watts, Knoxville, Tenn.) Grown by I. Keicher, Conkling, Tenn. Roundish conical, oblique; large; rough, with russet patches and knobs; yellow, overspread with greenish and golden russet; flesh yellowish, moderately fine grained, tender, juicy, sweet, rich; very good; autumn.

Manor. (Henry S. Rupp, Shiremanstown, Pa.) Roundish, slightly conical; of medium size; smooth; greenish yellow, washed with red and striped with crimson; flesh yellowish, fine grained, tender, moderately juicy; flavor mild sub-acid, aromatic; very good; early winter.

Millboy. (C. S. Scott, Sinks Grove, W. Va.) Commended for planting in lowlands, such as creek and river bottoms, where most apples do not succeed. Roundish, slightly flattened, regular, large; smooth; yellow, washed with red and striped with crimson, having a slight bloom; skin thin, tenacious; flesh yellowish, moderately fine grained, tender, juicy; sweet; good; August and September.

Millbrook. (P. Emerson, Wyoming, Del.) Chance seedling in a town lot in Wyoming. Roundish oblate; size medium; smooth; bright red; flesh yellowish white, firm, crisp; sub-acid; good to very good; early winter.

Mock. (Prof. John T. Stinson, Fayetteville, Ark.) Roundish, unequal; large; moderately smooth, having some fine leather cracking; yellow, almost entirely covered with red, indistinctly striped with darker red; flesh yellowish, tinged with red, moderately crisp, moderately juicy; sub-acid, nutty; good; winter.

Mount Penn. (Joseph Shearer, Reading, Pa.) Chance seedling in Berks Co. A large, striped crimson, roundish conical, fruit of good quality; season winter.

Nash. (Prof. R. L. Watts, Knoxville, Tenn.) Original tree said to have been on farm of Arthur Nash, in Union County, Tenn., forty years ago.

Oblate, unequal; large; smooth; greenish yellow, washed with dull red and striped at apex with bright red; flesh yellow, shaded with green at core, moderately fine grained; sub-acid; good; autumn.

Newby. (Thomas T. Newby, Carthage, Ind.) A variety which has been grown in Rush County, Indiana, for forty years or more and not identified as a described variety. Oblate, slightly oblique; large; greenish yellow, striped and splashed with bright, coppery red; skin thin, tough; flesh very yellow, rather coarse grained, juicy; mild sub-acid; good; winter. Tree a strong grower, very hardy and productive. A promising market apple for the middle west.

Nuba. (W. L. Morgan, Cains Store, Ky.) Origin unknown; somewhat grown in Pulaski County, Ky., and named for Squire Nuba, near Somerset. Oblate, unequal; small; yellow, splashed and striped with crimson; sub-acid; very good; season summer.

Ogle—Syn. *Winter Snow.* (D. J. Piper, Forreston, Ill.) Oblate, slightly oblique; size medium; smooth; yellowish, washed with scarlet and striped with dark crimson; dots conspicuous, yellow, protruding, some aureole; skin thin, tenacious; flesh whitish, moderately fine grained, crisp, juicy; very mild sub-acid; good to very good; winter.

Okoloma. (S. H. Stepp, Dry Creek, Tenn.) Set as a sprout in 1880. Tree a rapid grower, now nearly 20 feet high. Oblate, unequal; large; greenish yellow, washed with pale red and striped; flesh white, satiny, fine grained, tender, dry when over ripe, sweet, rich; very good; August, September.

Ooltewah. (Prof. R. L. Watts, Knoxville, Tenn.) Roundish oblate, unequal; large; smooth, except for russet patches; greenish yellow, ripening into golden yellow; flesh yellowish, coarse grained, tender, juicy; sub-acid; good; August.

Oostanaula. (Prof. R. L. Watts, Knoxville, Tenn.) Grown by J. F. Fisher, Apison, Tenn. Roundish oblate; medium to large; smooth, glossy, with fine russet markings at apex; greenish yellow, with a suggestion of blush on exposed side; skin thin, tenacious; flesh yellowish, satiny, moderately fine, tender, moderately juicy; sweet, rich; very good; August.

Oregon *Sweet.* (S. H. Cramer, Ottawa, Kans.) Said to have originated in Oregon; has been grown in Kansas since about 1877. Tree a strong, spreading grower, bears young and is very productive. Roundish oblate; large; smooth; golden yellow; sweet; very good; late July and early August.

Peebles. (The late William M. Sammels, Clinton, Ky.) Prolate, truncated, slightly oblique, slightly unequal; size above medium; moderately smooth, with rough russet patches and erupted dots; greenish yellow, with a dull blush on exposed side; flesh yellowish, moderately fine, breaking, juicy; sub-acid; good to very good; early winter.

Pinkham—Syn. *Pinkham's Keeper.* (T. A. Pinkham, Hulington, Ohio.) A seedling resulting from one of the early plantings in Clermont Co., Ohio. Ovate; small; smooth; yellow, splashed and striped with dull red; flesh yellowish, fine grained, tender; good; winter.

Potomac. (Henry S. Rupp, Shiremanstown, Pa.) Grown by George Arnold, Burlington, W. Va. Roundish oblate; very large; smooth; greenish yellow, with a suggestion of blush on the exposed side; flesh yellowish, fine grained, very tender, juicy; sub-acid, sprightly; very good; early winter.

Ragsdale—Syn. *Smith's Seedling.* (The late W. L. Moores, M. D., Cyruston, Tenn.) Originated on the farm of one Edward Smith, on the highlands of north Alabama. Has been propagated in a small way by a local nursery in Tennessee since 1888. Roundish conical; regular; large; pale greenish,

with dark yellow veins; rather coarse, breaking, moderately juicy; sub-acid; very good; winter.

Red Carver. (Peder Pedersen, Huntingdon Valley, Pa.) Originated and grown for many years in Montgomery County, Pa., but found in only three orchards by Mr. Pedersen in 1895. Tree bears annually, though heavier in alternate years, and holds its fruit well. Roundish conical, regular; of medium size; moderately smooth, oily, with a few russet knobs; yellowish white, washed and striped with red and shaded with darker red and overspread with gray, flesh yellowish, tinged with red, moderately fine grained, tender, juicy; sub-acid, sprightly; good; winter.

Rhea. (Prof. R. L. Watts, Knoxville, Tenn.) Grown by J. D. Ellis, Dayton, Tenn. Original tree 40 or 50 years old. Roundish oval, slightly truncated, slightly unequal; size medium; smooth; yellow, washed and striped with red; flesh white; mild sub-acid; good to very good; fall.

Rittenhouse. (Silvanus Gordon, Sergeantsville, N. J.) Native of Huntingdon Co., N. J.; a yellow, blushed apple of medium size and very good quality, ripening about mid-winter.

Rosedale *Pippin*. (Prof. R. L. Watts, Knoxville, Tenn.) Grown by I. Keicher, Conkling, Tenn. Roundish oblate, unequal; size above medium; yellow, washed with red, splashed and striped with dark crimson; flesh yellowish, moderately fine, tender, juicy; sub-acid, rich; good to very good; fall.

Seaford. (Charles Wright, Seaford, Del.) Roundish, regular; of medium size; smooth; greenish yellow, washed with red and indistinctly striped with crimson; skin thin, tender; flesh greenish yellow, moderately fine, meaty, juicy; sub-acid, rich; very good; winter.

Seal. (J. A. Applegate, Mount Carmel, Ind.) Originated about 1885 in an old blue grass pasture. Roundish truncate, regular; of medium size; moderately smooth, though having numerous russet knobs and dots; yellow, washed with red, splashed and striped with crimson, having a thin gray over color; flesh yellow, moderately fine grained, breaking, juicy; very mild sub-acid; very good; winter.

Seedling. (C. L. Watrous, Des Moines, Ia.) Originated near Des Moines, an apparent seedling of Jonathan and Winesap. Roundish; medium; yellow, washed with crimson over whole surface and striped with purplish crimson; sprightly sub-acid; quality very good; winter.

Seedling. (C. L. Watrous, Des Moines, Ia.) Received from Decatur Co., Ia. Oblate; large; greenish yellow, washed and striped with purplish red; sub-acid; very good; season winter.

Sevier. (Prof. R. L. Watts, Knoxville, Tenn.) Originated by J. M. Bell, Mynath, Tenn. Roundish, unequal; medium to large; smooth; creamy white, washed with red, striped and splashed with crimson; skin thin, tough; flesh yellowish, satiny, moderately fine grained, juicy; sub-acid; good; August.

Shenk. (A. Bolen, Kimball, Va.) Originated about 1860, near Thornton's Gap, on the west side of the Blue Ridge Mountains. Tree thrifty, productive and an annual bearer. Roundish, conical; size above medium; moderately smooth, with some russet patches; yellow, washed, striped and splashed with red and overspread with gray; skin thick, tough; flesh yellowish white, fine grained, tender, very juicy; sub-acid; very good; late winter.

Shimston. (Albert Barnes, Shimston, W. Va.) Originated with Mr. Barnes and has been bearing since 1883. Roundish oblate; large; greenish yellow, washed with red and striped with crimson slightly overspread with gray; mild sub-acid; good; season late winter.

Spalding—Syn. *Prince George's County Pippin.* (Scott Armstrong, Forestville, Md.) Found as a small scrubby tree in a fence row in 1870. Resembles Virginia Greening somewhat in size, form and color. Roundish, slightly conical, slightly unequal; large; greenish yellow, with a bronzed blush on exposed side; skin moderately thick and tough; flesh yellowish, fine grained, tender, juicy; sub-acid; good to very good; winter.

Spurrier. (Samuel Spurrier, Solon, Ia.) Oblate, slightly unequal and ribbed; size medium; whitish yellow, washed with red and striped with crimson; sub-acid; very good; early winter. Prized for pie-making.

Spy Wine. (Joseph T. Ratliff, Richmond, Ind.) Roundish conical; size above medium; moderately smooth, somewhat roughened by russet dots; yellow, washed with dull red and striped with darker red; flesh yellow, rather coarse, tender, melting, juicy; mild sub-acid, aromatic, rich; very good; autumn.

Stinson. (Prof. R. L. Watts, Knoxville, Tenn.) Grown by Bird, Dew and Hale, Treeville, Tenn. Roundish; large; moderately smooth; greenish yellow, washed with pale red, splashed and indistinctly striped with crimson, overspread with gray; skin moderately thick; flesh yellowish, moderately fine, crisp, juicy; sub-acid, rich; very good; autumn.

Stout. (Wilbur C. Stout, Monrovia, Ind.) Original tree 50 years old. Prolate, slightly conical; size medium; smooth, oily, yellow; skin thin, tender; flesh yellowish white, crisp; sub-acid, rich; good; autumn.

Sullivan. (George McNiell, Paris, Tenn.) A chance seedling on the farm of Peyton R. Sullivan,, near Paris, Tenn. Oblate, slightly conical, unequal; of medium size; yellow, washed with mixed red, splashed and indistinctly striped with gray toward the base; flesh yellowish, fine grained, tender, juicy; sub-acid, rich; very good; winter.

Swadley—Syn. *Red Pippin.* (R. L. Watts, Knoxville, Tenn.) Grown by D. C. Swadley, Johnson City, Tenn. Oblate; of medium size; moderately smooth, with some leather cracking and rough russet dots; yellow, washed with red, splashed and striped with dark crimson; skin thick, tough; flesh yellow, moderately fine, tender, juicy; sub-acid, rich; very good; autumn.

Tippecanoe. (A. R. Ryman, Cedar Grove, Ind.) First fruited in 1895 on the farm of Jacob Grabel, in Franklin County, Ind. Roundish, unequal, ribbed; large; smooth; rich yellow, with bronze blush on exposed side; flesh yellowish, fine grained, crisp, juicy; sub-acid; good; autumn.

Twisty. (Jno. A. Moomaw, Fruitdale, Ohio.) Originated in 1802 from seed planted at South Salem, Ross Co., Ohio, by James Wilson; a regular and abundant bearer. Roundish, truncate, regular; small; smooth; yellowish white, washed on one side with pale red and beautifully striped with scarlet and crimson; flesh yellowish, fine grained, very tender, juicy; sub-acid, aromatic, rich; very good to best; late summer, autumn.

Underwood. (A. Branson, New Sharon, Ia.) Originated in Mahaska Co., Ia. Roundish, ribbed; large; yellow, washed with mixed red, splashed and striped with crimson; sub-acid; very good; season winter.

Via. (Benjamin Buckman, Farmingdale, Ill.) Oblate, slightly unequal; size medium; smooth; greenish yellow, washed with pale red, blushed with crimson and overspread with gray; flesh yellowish, tinged with red at calyx tube, fine grained, crisp, juicy; mild sub-acid; good to very good; autumn.

Vineland—Syn. *Reeves Favorite.* (N. A. Patterson, Vineland, Tenn.) An old tree, probably a chance seedling. Oblate; above medium in size; smooth.

oily; greenish yellow; moderately fine, crisp, juicy; mild sub-acid, rich; very good; early winter.

Winterwood. (The late Henry Shimer, Mount Carroll, Ill.) Oblong; small; very smooth; greenish yellow, washed with carmine and indistinctly striped with crimson; flesh yellowish, slightly stained with red, fine grained, moderately tender, juicy; mild sub-acid, almost sweet; good to very good; winter.

Woodpile. (Prof. R. L. Watts, Knoxville, Tenn.) Grown by N. R. Keese, Keese, Tenn. Roundish conical; large; smooth; yellow, washed and indistinctly striped with pale red; skin thin, tenacious; flesh yellowish, fine grained, tender, juicy; sub-acid; very good; autumn.

PEAR.

Ayer. (G. C. Brackett, Lawrence, Kans.) Originated by O. H. Ayer, Lawrence, Kans. Tree of upright habit, very productive, hardy and resistant to disease. Obovate, obtuse pyriform; of medium size, moderately smooth, with some russet patches, pale, clear, lemon yellow with numerous minute russet dots; skin thin, slightly bitter; flesh whitish, fine grained, tender, juicy; very mild sub-acid, rich; very good; early, just before Clapp Favorite.

Koonce. (George Gould & Son, Villa Ridge, Ill.) Pyriform; of medium size; smooth, greenish yellow, with a bronze cheek; dots minute, light russet; skin tender; flesh white, granular; flavor rather insipid; quality barely good; season July 1 to 10. The earliness of this pear seems to be its chief recommendation.

Lyerle. (Geo. Gould & Son, Villa Ridge, Ill.) A seedling of Bartlett originated by Mr. Lyerle of Union Co., Ill., in 1881; thus far productive and free from blight. Pyriform; of medium size; yellowish green with numerous patches of russet; sugary; good; early July; four weeks ahead of Bartlett.

Ozark. (John Gabler, Springfield, Mo.) Originated about 1843 from seed taken from Kentucky to Polk Co., Mo., by a Mr. Brooks. Oblate, large; moderately smooth, greenish yellow, with a few russet veinings and patches; skin thin, tender; flesh whitish with yellowish veins, buttery, granular, mild sub-acid; good; August.

Posey. (A. R. Ryman, Cedar Grove, Ind.) Found in a fence row on the farm of Jacob Grabel, where it originated about 1880. In the orchard it is a stocky tree bearing a heavy crop each year. Fruit pyriform; of medium size; moderately smooth, lemon yellow; dots small, brown; flesh whitish, buttery, mild sub-acid; good to very good; September to December.

Shindel. (J. A. Stahle, Emigsville, Pa.) Locally grown for seventy-five years and never affected by blight; very productive. Roundish obovate; of medium size, rather smooth; lemon yellow with thin golden russet patches and veining; flesh whitish; rather fine, granular, moderately juicy, mild sugary, moderately rich; good; August and September.

Stout. (Wilbur C. Stout, Monrovia, Ind.) Originated during the first third of the present century; claimed to be hardier than Kieffer and to fruit every year. Obovate pyriform, ribbed; of large size; moderately smooth with some russet patches; greenish yellow, ripening to bright yellow; flesh whitish, satiny, fine grained, buttery, melting; mild sub-acid, sprightly; very good; autumn.

Sudduth. (Augustine and Co., Normal, Ill.) Propagated from an old tree on the grounds of Titus Sudduth, near Williamsville, Ill., which is very large, vigorous and free from blight. Obovate, oval; of medum size; moderately

smooth with russet patches; green with minute brown dots; flesh whitish, moderately fine, tender, juicy; mild sub-acid, almost sweet; good; September. Very closely resembles, if not identical with Birkett, which was introduced some years ago from the same region.

QUINCE.

Seminole. (Wm. H. McKenney, Morrow, O.) Roundish; medium to large, greenish yellow, flesh yellowish, fine-grained, juicy; sub-acid, slightly astringent; very good; late.

PEACH.

Artz. (Allen Dodge, Washington, D. C.) A seedling clingstone of large size and handsome appearance, grown in Georgetown, D. C. Roundish oval; with deep abrupt cavity and shallow suture; apex small, fleshy, protruding; surface velvety; creamy white, blushed and marbled with crimson; down short, skin thin, tough; flesh white, tinged with red at stone; flavor mild sub-acid, almost sweet, sprightly; very good; Sept. 1.

Beaver (No. 2). (W. E. Jones Co., Lincoln, Ill.) Roundish, above medium, white, washed, blotched and beautifully splashed with red; down short, persistent; skin thin, slightly bitter; flesh white, purplish red at stone; stone oval, small, free; mild sub-acid; very good; season early August.

Berry. (Allen Dodge, Washington, D. C.) Roundish; of medium size; velvety, with loose down; creamy white, washed with red and having a beautiful crimson cheek; cavity wide, deep; suture of medium depth terminating at the swollen, divided apex; skin thin, tenacious; flesh whitish, tinged with red at stone; cling; meaty, pleasant; very good; Sept. 8 to 15.

Bishop—Syn. *Bishop's Early.* (Charles Wright, Seaford, Del.) Globular, of medium size; surface velvety, with short persistent down; whitish, blushed and splashed with red; suture shallow except at cavity and apex; skin moderately thick, tenacious; stone of medium size, oval, semi-cling; flesh whitish, stained with red at stone; tender, melting, juicy; mild sub-acid; good; late July; flowers small, glands globose.

Black. (Dr. J. J. Black, Newcastle, Del.) A seedling of the Smock type in a garden, New Castle, Del., and named in honor of Dr. Black. Roundish; large; yellow with deep blush on exposed side; down long, loose; skin of medium thickness; flesh yellow, red at stone, stone oval, medium size, free; rich sub-acid; very good; late.

Denton. (J. W. Kerr, Denton, Md.) The result of a cross of Elberta on Early Beauty; tree resembles Elberta in vigor and appearance and is extremely productive. Oblong, bulging; large; yellow washed with red; down short, persistent, skin thick, somewhat bitter; flesh yellow, deeply stained with red; stone long, oval; of medium size, free, sub-acid, sprightly; good; later than Elberta.

Donegal. (H. M. Engle, Marietta, Pa.) Roundish, large, velvety, with short persistent down; yellow, washed and mottled with red on the exposed side; suture deep at extremities, but shallow between; skin thin, tenacious; stone of medium size; plump, oval, free; flesh yellow, stained with red at stone; melting, juicy, mild, sprightly, rich; very good; Oct. 10 to 20.

Elriv. (J. W. Kerr, Denton, Md.) A cross of Early Rivers on Elberta; ripens with St. John; tree strong grower and productive; has fruited three seasons. Roundish, above medium size; creamy white washed with red and somewhat splashed; down short; loose; skin thin, tender; stone large, oval, semi-cling; sprightly, mild sub-acid; quality good.

Kerr Dwarf. (J. W. Kerr, Denton, Md.) Tree semi-dwarf in habit; very close jointed and dense in foliage. Roundish, large, velvety, yellow, washed, mottled and splashed with red; suture moderately deep and distinct; apex double, protruding; skin thick, tough; stone large, oval, cling; flesh yellowish, slightly stained at stone; firm, juicy, mild sub-acid, rich, sprightly; very good; glands reniform; Sept. 1.

McCollister. (J. W. Kerr, Denton, Md.) Roundish, conical; large; down short, persistent; greenish yellow with a dark maroon cheek and mottled with light red; suture deep, apex prominent, skin thin; stone large, oval, pointed, free, bright red; flesh yellow, juicy; sub-acid; good to very good; late September; a very promising late market peach.

Marcella. (E. T. Daniels, Kiowa, Kans.) Large, roundish; lemon yellow with a purplish blush on exposed side; suture deep; down short and loose; flesh yellow with light yellow veins, tinged with red at stone, melting; free; brisk sub-acid; good; October 1.

Sawyer. (W. N. Blackington, Denmark, Ia.) A variety long grown from seed in the vicinity of Denmark, Ia. Roundish; large; rich golden yellow, blushed and splashed on exposed side; down short, persistent; skin thin; flesh yellow, red at stone; stone oval, small, free; mild sub-acid; very good. Middle of September; hardy in both wood and bud.

Shop. (E. A. Riehl, Alton, Ill.) Roundish; large; creamy white with a slight blush on the exposed side; skin moderately thick, tender; stone of medium size, oval; flesh greenish white, stained with red next to skin; tender, melting, very juicy, mild sub-acid; very slightly bitter; good; Sept. 15.

Smeigh. (Daniel Smeigh, Lancaster, Pa.) Roundish conical; size above medium; white, washed and mottled with red; down long, loose; skin thick; flesh white, red at stone, firm, compact; stone large, oval, cling; sweet, rich, very good; very late.

PLUM.

Dunlap (No. 2). (J. W. Kerr, Denton, Md.) *Prunus hortulana*. Roundish to roundish oval; of medium size; surface smooth, glossy, light red changing to darker red, with numerous minute, light russet dots, and rather thin bloom; skin thick, tough; flesh yellow, soft, juicy, cling; sweet, rich, very good; without bitterness or acridity. A very promising variety for dessert, cooking and market; Aug. 10.

Garnet. (J. S. Breece, Fayetteville, N. C.) Came up under a Kelsey tree in 1891 and fruited first in 1892. Roundish oval; large, smooth; dark garnet red with minute russet dots and bluish bloom; skin thin, moderately tenacious, somewhat bitter; stone of medium size, oval, cling; flesh yellowish, translucent, stained with red on one side of stone; mild, almost sweet; good; June 20 to 30.

Gordon (No. 3). Silvanus Gordon, Sergeantsville, N. J.) A seedling of Imperial Gage. Roundish oblong; size medium; yellow, overspread with coppery red; dots minute, yellow; bloom bluish white, profuse; skin moderately thick, acid; flesh rich, yellow meaty, juicy; stone oval, of medium size, free; mild sub-acid, rich; very good; beginning of September.

Kicab. (Benj. Buckman, Farmingdale, Ill.) Originated by Mr. Buckman. Roundish oval; of medium size; with smooth surface, glossy beneath the bloom; crimson, with dark purplish stripes radiating from cavity, covered by profuse lilac bloom; skin thin, tenacious, slightly acid; stone large, oval, cling; flesh yellowish, translucent, tender, melting, somewhat fibrous, juicy; mild sub-acid, almost sweet; good to very good; August 10 to 15.

Lamnix. (J. S. Breece, Fayetteville, N. C.) Thought to be a cross of Abundance and Wild Goose; as large as the latter, firmer and several days earlier. Oval; of medium size; smooth, glossy, coppery red, a little darker than Wild Goose, with light blue bloom; skin thin, tenacious, bitter; stone large, oval, cling; flesh yellowish, translucent; tender, juicy, slightly fibrous; mild subacid, rich; slightly bitter at stone; good; June 20 to 25.

Monolith. (J. S. Breece, Fayetteville, N. C.) Apparently intermediate between Abundance and Wild Goose; tree upright, free from thorns. Roundish, slightly conical, of medium size, smooth, bright coppery red, dots numerous, covered with a profuse pale blue bloom; skin thin, tenacious, bitter; stone of medium size, oval, semi-cling; flesh yellowish, translucent, melting, very juicy; mild sub-acid, refreshing; good; July 5 to 15.

Palmer. (J. S. Breece, Fayetteville, N. C.) Probably a pure Abundance seedling. Roundish conical; of medium size; surface smooth; coppery red with numerous russet dots and light blue bloom; skin thin, bitter; stone large, long, oval, cling; flesh yellowish, translucent, with yellow veins, meaty, tender, juicy, somewhat fibrous; mild sub-acid; rich; good to very good; July 15.

Pander. (J. S. Breece, Fayetteville, N. C.) Seedling of Abundance ripening with Wild Goose; roundish, large; light to dark crimson; dots minute, russet, raised; bloom slight; skin thin, slightly bitter; flesh yellow, translucent, rather firm, meaty, juicy; stone oval, of medium size, cling; sugary, vinous, rich; quality very good.

Ruby. (J. S. Breece, Fayetteville, N. C.) Originated by Mr. Breece. Bore its first fruit in 1894 and was then named. Oval; of medium size; smooth, glossy; bright crimson with indistinct dark purplish stripes; skin thick, tenacious, sub-acid, astringent; stone oval, large, cling; flesh yellowish, translucent, with light veins; meaty, tender, slightly fibrous, juicy; sweet, rich, very good; July 15.

Scribner. (J. S. Breece, Fayetteville, N. C.) Thought to be a hybrid of Wild Gooose on Abundance. Roundish oval, large, smooth, bright crimson, with numerous minute russet dots, and pale bloom; skin of medium thickness, tenacious; slightly bitter; stone medium, oval, cling; flesh yellowish, translucent, tender, melting, juicy; somewhat fibrous; mild sub-acid; good; early July.

Sirocco. (J. S. Breece, Fayetteville, N. C.) A probable hybrid of Abundance and Marianna. Tree resembles Marianna, but has no thorns. Roundish oval; of medium size; coppery red, with streaks of yellow, minute dots and light blue bloom; skin thin; stone medium in size, oval; flesh reddish yellow, fine grained, very juicy; sweet, sub-acid near stone; good; July 15.

Stoddard. (J. W. Kerr, Denton, Md.) Of *Americana* type; originated in Iowa and disseminated by J. Wragg and Sons. Round; above medium in size; smooth, glossy; coppery red; with minute russet dots and profuse pale blue bloom; skin moderately thick, mild acid, slightly astringent; stone large, oval, cling; flesh yellowish, translucent, tender, fibrous near skin, juicy, sub-acid; good; Aug. 15.

Truro. (E. W. Tucker, Williamsfield, Ill.) A seedling of Weaver crossed with Miner. Tree upright; hardy; with good foliage. Oblong oval; large, smooth; red, with numerous minute russet dots and whitish bloom; skin thin, tenacious; mildly acid, without bitterness; stone medium in size, oval, cling; flesh yellowish, translucent, with yellow veins, tender, melting, juicy; mild sub-acid; rich; very good; Sept. 10 to 15.

Tucker. (Ezra W. Tucker, Williamsfield, Ill.) Grown from seed taken from a cluster containing Weaver, Miner, Wild Goose, and two prune trees; tree resembles Wild Goose. Oval with a distinct neck; light purplish red or greenish yellow; skin thick, tender, slightly acid; flesh yellowish, translucent, tender, juicy; stone large, angular, cling; flavor mild, almost sweet; very good; late August.

NECTARINE.

Kentucky. (H. H. Thierman, Louisville, Ky.) Propagated by seed for many years in the vicinity of Louisville. Roundish; size medium; creamy white washed with light and dark purplish red over most of the surface; skin thin, very slightly bitter; flesh creamy white, red at stone, tender, melting, juicy; stone oval, of medium size; free; sub-acid, rich; very good; season early August.

APRICOT.

Sunrise. (Russian) (Stark Bros., Louisiana, Mo.) Roundish oval; of medium size; velvety, with short persistent down; orange yellow; skin moderately thick, moderately tenacious; stone large, oval, free; flesh yellow, meaty, tender, juicy; sub-acid; good; July 1.

Superb. (A. H. Griesa, Lawrence, Kans.) Roundish oval, of medium size; smooth, dull yellow or light salmon; skin thin, tough, tenacious; stone of medium size, oval, free; flesh dull yellow, firm; mild sub-acid; good; early July.

CHERRY.

Hoke—Syn. *Wirt.* (John Keech, Spry, Pa.) Originated at Hanover, Pa. A Duke, long grown locally in York county, Pa. Large; broad, roundish heart shape, dark purplish red; skin thick, quite tough; resisting rot in rainy weather; flesh dark, firm, meaty; stone of medium size; sub-acid, sprightly; very good for dessert, market or canning.

Rupp. (J. Charles Heiges, York, Pa.) Grown by Solomon Rupp, York, Pa. Apparently of Duke type. Roundish, slightly conical; very large; smooth, glossy; yellowish, mottled and marbled with fine coppery red; skin thick, tender, acid, slightly bitter; stone large, oblong; flesh yellowish, translucent, tinged with red; mild sub-acid; rich, sprightly, very good; June 15-25.

Wabash. (Samuel Kinsey, Kinsey, O.) Original tree stood on grounds of Mrs. Ellen Pawlings, Wabash, Ind., since 1848. Bears its fruit singly, but is reported to be about as productive as Early Richmond. Roundish oblate, above medium in size, smooth, glossy, bright crimson, changing to dark crimson; skin thin, tenacious; stone small, angular; flesh yellowish, translucent with yellow veining, tender, melting, sub-acid; good; about one week later than Early Richmond.

GRAPE.

Perlin. (Geo. Hosford, Ionia, Mich.) Seedling of Concord; cluster long, with small shoulder; berry round, of medium size; greenish yellow with profuse whitish bloom; skin thick, astringent; flesh greenish, translucent, moderately tender, with abundant juice; seeds few; flavor mild sub-acid, sweet; quality good to very good; season medium.

Campbell Early. (George W. Campbell, Delaware, O.) Seedling of Moore Early crossed with a seedling of Muscat-Hamburg on Belvidere. Leaf large to very large, roundish, lobed; rich green; cluster large to very large, shouldered, moderately compact; berries large, nearly round; black with thin light

blue bloom; skin thin, flesh translucent, meaty, tender; very juicy; flavor sweet, rich aromatic, delicate; quality very good; early, but keeps well.

GOOSEBERRY.

Portage. (A. H. House, Mantua Station, O.) A chance seedling in 1874. Fruit solitary, evenly distributed; large to very large; oblong oval; moderately smooth; slightly downy, with an occasional prickle; yellowish green with bronze dots near stem; flesh translucent, greenish, quite firm, pulpy, melting, moderately juicy; mild sub-acid, rich; very good; July 15.

RASPBERRY.

Gault. (W. C. Gault, Ruggles, O.) Medium to large; borne in compact clusters with stout stems and pedicels; fruit dull black with thin bloom; moderately juicy, with very good shipping quality; ripens from early to very late; being of the "everbearing" type.

Miller. (Charles Wright, Seaford, Del.) Large, bright crimson; firm, rather dry, moderately juicy, sprightly, sub-acid, rich; very good; very early; an excellent shipper; reported to have been found near Wilmington, Del.

BLACKBERRY.

Allen. (W. B. K. Johnson, Allentown, Pa.) Medium to large; irregular, oblong or oval; drupes glossy with few adherent pistils, jet black, not fading, seeds small, very tender; flesh firm, compact, very juicy; flavor mild, sweet, with hardly enough acidity; quality good; ripens about with Early Harvest.

Mr. Johnson reports that it is the most productive variety on his grounds and that it is a stronger grower than Kittatinny.

Americus. (J. H. Langille, Kensington, Md.) Found in a patch of Early Harvest and thought to be a seedling of that variety, though in cane, leaf and fruit it resembles Erie. Medium to large; irregular, oval or oblong conic; color jet black enduring well; seeds rather large; flavor rather acid, but quality good when fully ripe; season between Early Harvest and Erie.

Rathbun. (A. F. Rathbun, Smith's Mills, N. Y.) Oblong, conic, irregular; very large; brownish black, moderately glossy; drupes large; flesh dark, purplish red; firm, becoming tender when fully ripe; mild sub-acid with slight aroma; good; season medium; a good shipper.

STRAWBERRY.

Brandywine. (E. T. Ingram, West Chester, Pa.) Originated in 1891. Bisexual. Large, angular, conical, sometimes grooved, often compressed; calyx large, bright green, adhering firmly; surface irregular, rather rough, with slight gloss; bright crimson; seeds very numerous, large, slightly depressed; flesh salmon color, very firm, brisk sub-acid; moderately rich, very good for canning; June 10.

Brunette. (Originated by Granville Cowing, Muncie, Ind.) Roundish, regular; size above medium; calyx large, light green, tenacious, glossy, dark red; with seeds numerous and depressed; flesh salmon red; fine, melting, moderately firm in texture; sub-acid; very good; season medium early.

Glen Mary. (E. T. Ingram, West Chester, Pa.) Bisexual. Medium to large, roundish conical, often truncate, irregular, compressed; calyx of medium size; dull grayish green; moderately adherent; surface irregular,

somewhat glossy; dark crimson, fading quickly; flavor mild sub-acid to sweet; rather insipid; not better than Bubach or Crescent; June 10.

PERSIMMON.

Hicks—Syn. *Superior*. (E. H. Trueblood, Hitchcock, Ind.) A choice native variety, of which trees have been propagated locally for many years. It is now shipped to the larger cities to some extent; tree productive; oval; of medium size; dull grayish red; sweet and rich, free from astringence when fully ripe; ripening early and continuing for six weeks.

SHAGBARK.

Dover. (Andrew Stough, Dover, Pa.) Medium or below in size, quite angular, with broad base, tapering toward the long sharp point; shell thin, cracking moderately well; quality good, slightly astringent.

PERSIAN WALNUT.

Drew. (William P. Corsa, Milford, Del.) Grown from a nut planted by Andrew Corsa about 1875 and by him given, when one year old, to Wm. P. Corsa, on whose farm in Sussex county, Del., the original tree now stands. Blooms late and escapes frost. Of medium size; oblate, with roundish base and compressed apex; moderately smooth, yellowish; shell quite thin; kernel short; thick, plump, light yellow; meat yellowish white; sweet, rich, slightly astringent; good to very good; self hulling.

BLACK WALNUT.

Thomas. (James W. Thomas & Sons, King of Prussia, Pa.) Has been propagated by grafting and disseminated to a considerable extent. Oblate, compressed, slightly pointed at base and distinctly so at apex; very large; shell medium to thin; cracks fairly well, though the kernel is not easily removed in perfect halves; flavor sweet, rich; quality good to very good.

CHESTNUT.

Black. (J. W. Kerr, Denton, Md.) Of the Japanese type. Named in honor of Dr. Jno. J. Black, of Newcastle, Del. Large, with plump kernel surrounded by a somewhat acrid skin; good for roasting; very productive, yielding two to six perfect nuts to the bur.

SOUTHERN DIVISION.

BY R. C. BERCKMANS, AUGUSTA, GA.

Dr. F. M. Hexamer, Chairman Committee on Native Fruits, American Pomological Society:

Although a large number of new native fruits have been submitted during the past two years, few possess sufficient merit to report upon them. I herewith submit the following notes:

APPLES.

Riegel—Above medium; yellow, but in some specimens nearly covered with light crimson and narrow stripes. Flesh yellowish, crisp, sub-acid, good

flavor, quality very good; maturity September; of the Red Margaret strain. Origin, S. D. Riegel, Experiment, Ga.

Kenworthy—Above medium; dark crimson, with a few faint stripes; flesh tender, sugary, yellowish; quality very good; November to January; of the Shockley type; a good keeper. Origin, Dr. C. J. Kenworthy, Tryon, N. C.

PEACHES.

Peen-To. (Freestone.) Differs from the old Peen-To in being a perfect freestone and with less *mogan* flavor; suitable for Florida only.

Everbearing—The tree blossoms during a period of four weeks. Fruit of the first ripening is 3½ inches long by 2 inches in diameter. The size of the second and following crops diminishes gradually until the last ripening is about 2 inches in diameter. Skin creamy white, mottled and striped light purple and pink veins; flesh white with red veins near the skin; very juicy; vinous and of excellent flavor; quality very good to best; freestone of the Indian type. First ripening begins early in July and successive crops last until beginning of September or during a period of eight to ten weeks. An accidental seedling originated in South Georgia; has produced fruit during the past eight years.

Matthews Beauty—Very large; yellow; vinous; juicy; freestone; August 5th to 15th; quality good; of the Smock strain. Origin, J. C. Matthews, Cuthbert, Ga.

PEARS.

Biscuit—Shape very flat, 3¾ by 2 inches; skin smooth brown russet; calyx open in a shallow basin; flesh yellow, slightly gritty; very juicy, sweet, and with Seckel flavor; quality good; beginning of August. Originated, by Dr. J. H. Watkins, Goodes, Ga., from a seed of Seckel. Very prolific; fruit produced in clusters; principal merit, great fertility.

BRITISH PROVINCES.

BY L. WOOLVERTON, GRIMSBY, ONT.

Grimsby, Ont., August 17, 1897.

Mr. F. M. Hexamer, New York, N. Y.:

Dear Sir—In reply to your inquiry, I am sending you descriptions of new fruits and seedlings, which may perhaps interest you. Several of these varieties have come under my own notice, namely, "Morse's Seedling" and "Scarlet Pippin" apples. Samples of the Scarlet Pippin were sent to some of the meetings of our Association, and I have also seen it growing at the farm of Mr. Harold Jones, of Maitland, Ont., and I am sure it will take a prominent place as a fancy dessert apple. Much the same remarks might be made concerning the "Rochelle," which originated with Mr. R. W. Shepherd, of Montreal, Que., and is later in season than the Scarlet Pippin.

Among plums "Smith Blue" is chiefly interesting because of its earliness. Samples of this plum were shown me a few days ago, August 10, and it was then about the end of their season. The plum is small in size, but may be valuable on account of its season. A very interesting seedling cherry was sent me a few weeks ago by Mr. John Gormley of Pickering, Ont. It is a wonderfully firm cherry, and I think, promises to be of great value. Its

keeping quality is one of its important characteristics. I had a sample of it lying upon my table for about two weeks without any sign of decay. The flavor was sweet and good and more like that of the plum than the ordinary cherry. I am inclined to think that its peculiarities will make it a very desirable novelty. "Crosby Seedling" gooseberry is a very promising large variety with a red tinge. Mr. John Carnie of Paris, Ont., has sent me a gooseberry which he calls "Carnie Golden" and which seems to be promising. It is not subject to mildew and is an excellent bearer. The fruit is of a good quality and is larger than either Pearl or Downing. "Smith Giant" black cap, originating with Mr. A. M. Smith of St. Catherines, appears to have some value because of its productiveness and vigor of bush and the good size of the berry.

DESCRIPTIONS.

Seedling Apple—From S. P. Morse, Milton, Ont., August 14, 1896: Large, round, regular; clear yellow; skin smooth, glossy, with more or less indistinct black dots. Cavity broad, sloping rapidly; stem medium length; basin small, round, smooth, eye open; flesh white, tender, melting, buttery and juicy, with a peculiar pear-like flavor and aroma. Said to be a seedling of Early Harvest. Very fine, promising and worth propagating, if tree is vigorous. Mr. Morse says: "I take it to be a chance seedling of the old Yellow Harvest, because the tree sprang up not far from one of that variety which it very much resembles in many points, but is more vigorous. The fruit is much larger, finer in texture, of better form and exempt from fusicladium. It is here pronounced the 'best of all harvest apples.'"

Rochelle—A sample of this apple came to hand from R. W. Shepherd, of Montreal, on the 19th of November. It somewhat resembles the Cranberry Pippin externally, except that it is more oblate, and has a peculiarly, large, deep and abrupt basin. Fruit large, unequal, roundish oblate, somewhat uneven, obscurely ribbed; stem broken in sample, set in narrow, deep cavity with prominent fleshy lip on one side; calyx open, in large, deep, abrupt, uneven basin; color yellowish green, shaded and striped with light and dark shades of bright red.

PLUMS.

Early Blue—From A. M. Smith, St. Catharines: Very early plum, about the size of Lombard, but of much better quality. The samples were sent in about the 15th of July. Its earliness was its chief point of recommendation.

SMALL FRUITS.

Smith Giant black-cap—This raspberry is a seedling raised by A. M. Smith, of St. Catharines: On the 8th of July it was visited and found to be carrying a very large load of fruit. Mr. Smith claims for it hardiness and productiveness, and Mr. G. C. Caston, who has tested it at Simcoe Fruit Experiment Station, reports that it is hardy at that place. In other respects it much resembles the Gregg.

STATE AND NATIONAL LEGISLATION FOR THE SUPPRESSION OF THE SAN JOSE SCALE.

BY PROF. WM. B. ALWOOD, OF VIRGINIA POLYTECHNIC INSTITUTE.

[Abstract prepared by Prof. Alwood.]

Mr. President and Members of the American Pomological Society:

You must charge it to our genial and indefatigable brother, Col. Watrous, that I appear before you to speak on the now well worn subject of the San Jose Scale.

I feel like apologizing, to you individually, and to the great host of American fruit growers and nurserymen for constantly parading this subject before them. But this has not been of my own voice. This most pernicious insect was thrust upon us in Virginia through unfortunate circumstances; and just as our brightest dreams of the future greatness and prosperity of the fruit industry of our State were becoming a reality we were awakened somewhat rudely to the fact that this dreaded enemy of the deciduous fruits had already gained a foothold in our orchards and nurseries.

Had the fruit growers and specialists been properly appreciative of the danger from this pest it need not have gained a foothold at all in the east. But what we lacked in "foresight" we must now make up in "hindsight," hence it is incumbent upon us to meet this pest promptly and efficiently and reduce the danger of its further spread to the smallest possible minimum.

How can this be done? Certainly not by the action of the individual grower, nor of a single State, or of several States, acting without concert but by the united action of the growers of fruits, and nursery stock; and of the State and the National governments. It may be asked why this great effort and comprehensive co-operation of individuals and governments, State and National, is necessary. A full and detailed answer of this question is not necessary to this audience. It is sufficient to point out that because of peculiarities in the life history of this and some other like species only comprehensive efforts of this sort can be successful.

Briefly:

1. Its obscure nature renders it difficult for untrained observers to detect until serious injury has been already accomplished and the premises stocked with it, to remain a future menace to the owner and his neighbors for years, or until eradicated, if happily this can be accomplished.

2. Its persistency. The female insect once established upon a food plant does not and cannot leave it, but persists until the plant is destroyed either by the injuries of the insect or by other means, or until some sufficiently drastic remedy has been applied to destroy the scale insect in *situ*.

3. The extreme difficulty of applying successful remedies in a practicable manner to plants in the field. It is known to you all that only those insecticidal washes which are sufficiently caustic or solvent, in their action to destroy the scale-covering and reach the insect body beneath are effective as active agents. Another class of washes which coat the insects over as a varnish and thus imprison them, are somewhat effective, and a further class of remedies in the form of deadly gases may be used in closed rooms or tents, but thus far gas treatment has not been entirely successful in the east when used in the field with tents. There are still other remedial or destructive agencies from which we may possibly hope much in the future,

viz., insects and fungous parasites. It is still too soon to speak positively of these and at best the development and spread of these parasitic agents must be slow and from the past history of such matters we cannot believe that they will reach an effective stage until this insect, if left unchecked by other measures, shall have worked such harm as to practically ruin the orchard industry in many sections.

4. As a fourth reason for advocating the necessity of comprehensive co-operation in suppressing this insect I will mention its great fecundity. You are aware that after careful breeding experiments, Howard and Marlett stated that a single female had a possible chance to produce the enormous number of 3,416,080,000 individuals in a single growing season, at Washington, if it and all its progeny survived and reproduced at the rate observed under protected conditions. Of course no one believes that this great increase is possible under exposed conditions. But suppose that 50 per cent of this increase occurs, the result is simply alarming. And anyone who has observed this insect on a large scale in the orchards is forced to believe that even a greater per cent survives.

5. The last reason I will notice for pressing united action is, or might almost be called a corollary of the foregoing propositions, viz., that from these facts this insect is so likely to be widely disseminated on nursery plants that united action to secure enactment and enforcement of uniform inspection laws is at this juncture imperative.

The individual is quite helpless to protect himself from this peculiar and insidious insect unless concert of action can be secured by a whole community. This is known to be impossible without action by the State in the exercise of its police powers.

Thus we are at once confronted with the question of State Legislation. As an historical statement I may say that Virginia was the first Eastern State to enact a San José Scale Law. And without experience of our own or others to guide us we prepared a simple, direct measure based largely upon the exercise of the powers of inspection and condemnation of the infested stock.

Other States have now passed special acts, many of them more comprehensive and perhaps more effective than the Virginia law, but the main features of all can be summed up under the following synoptical heads, which are so arranged as to express what I consider most important in such enactments:

WHAT A LAW OUGHT TO CONTAIN.

1. The Authority—Authority invested in a board or person. If in a board it should provide for appointment by the same of an inspector who shall be clothed with responsible powers.

2. The Police Powers—Ample and clearly defined police powers should be given. To cover not only the right to enter and inspect but to authoratively prescribe what course shall be taken as to destruction or treatment. Obstruction of Inspector in any part of his duties should be sufficiently punished.

3. Local Quarantine—Full power to localize or quarantine within the State should be given. This is an important provision.

4. Appeal—In special legislation of this sort it is well to furnish full machinery for execution of same; hence, proceedings under appeal ought to be well defined and not left to slow and vexatious proceedings under common law.

5. Enforcement of Laws—Enforcement of findings ought to be made easy

and direct and such penalties provided as will render it expensive business to behave in a careless and dilatory manner.

6. Penalties—A sufficient penalty should attach to the selling, giving away or handling for sale or shipment of infested stock.

7. Appropriation—Such legislation must be properly supported by an appropriation or it will be of no avail.

But the power of the State is limited and it is quite certain that a State cannot effectually suppress a nuisance which is largely being disseminated in interstate commerce. Hence the power of the general government must be invoked if we are to be wholly successful in dealing with insect and fungous pests of this character.

It is clear that the general government cannot enter the State and deal with local infection or enforce State enactments between citizens thereof in regard to abatement or suppression of local nuisance. It is only when that larger question of the rights of citizens of the several States are concerned that a Federal law can apply. But we have here a case of the gravest danger to the large fruit interests of this country. The facts of the dissemination of the San José Scale and some other pests on nursery stock are sufficiently proved; the only question is to unite upon a bill which shall secure a just measure of safety to the purchase of nursery stock in the various States and still not prove ruinous to legitimate nursery interests.

The question of how to do this has been in the white heat of discussion for some months, precipitated by the recent wide outbreak of San José Scale. I believe for one that all the best interests of the country are now united on the essential features of a Federal Bill. Minor features, and the machinery of such legislation are yet to be adjusted by conference but in outline there is practical unanimity.

FEATURES OF A PROPOSED FEDERAL BILL.

1. Authority vested in the Secretary of Agriculture to provide rules and regulations and enforce its various provisions.

2. To require competent certificate of inspection and freedom from pernicious pests before permitting foreign stock to enter or require its inspection at destination.

3. To refuse, if found necessary, the right of vessels or any common carrier to enter the United States with uninspected stock.

4. To require competent inspection and certificate of freedom from pernicious pests before stock can be shipped in interstate commerce.

5. To require that common carriers, etc., shall not carry uncertified stock in interstate commerce.

6. Appropriation to cover expenses of executing the regulations adopted.

After full consideration it seems to be the consensus of opinion that the government should not concern itself with treatment of infested stock of any sort, for its officers would be absolutely powerless to enforce such a provision. The government inspector should concern himself solely with ascertaining whether the stock is free from the prescribed pests or not. All other repressive measures belong to the State.

Prof. Alwood: I will add a word to my paper in regard to the effects of this legislation. I have not seen a place in Virginia in the last two years where they have any scale on their nursery stock. In regard to fruit growers we have in some sections a little of the scale. I remember an orchard of one thousand and eighty trees which was badly affected. I could not assure

the owner that treatment would be effective and we cut them down and burned them. We treated another orchard very effectively and I could not find a scale the other day when I inspected it. Where this law is properly enforced the work seems to be effective. I do not think we can fully eradicate the scale in Virginia because it has taken to the hedge, willow and other plants. As I said, I do not think we can wholly eradicate it, but we can regulate it and we can control it. What we need is a well formed national bill that the States will be obliged to obey.

The following paper was read by the author:

INSECT LEGISLATION: CAN IT BE MADE BENEFICIAL AND PRACTICAL WITHOUT BEING DETRIMENTAL?

BY PROF. F. M. WEBSTER, OHIO AGRICULTURAL EXPERIMENT STATION, WOOSTER, OHIO.

The problem of Insect Legislation, except as applied to a national act, can hardly be termed an innovation, as State legislation against the introduction and spread of insects has been going on for fifteen or more years, and in several States. These State laws have, when tested, been pronounced unconstitutional by the courts, on the ground that they applied more or less directly to interstate commerce and to this extent infringed upon the rights of the general government, which alone has the right to legislate with respect to interstate or international trade.

It is a peculiar feature of our Government that each State has entire control of the commerce within its boundaries, while two States cannot regulate the commercial relations between them. An article of commerce, then, is amenable to United States laws while in transit between States, or between this country and any other. But when it has reached its destination, it becomes a part of the State to which it is consigned, and is not amenable to national, but to State laws, which, until its destination is reached, have nothing whatever to do with it. Moreover, where articles of interstate commerce are to be inspected by other than State officers, such inspection must be done while such articles are amenable to national laws. A United States inspector may only go, officially, into a State to make an inspection when the legislature of that State has passed an act giving the department to which he belongs the right to do so. Thus, we are in the position where neither State nor national laws can, singly, regulate transportation. The government can and does permit articles of commerce to pass through States where the use of such articles is condemned or restricted, while on the other hand articles can be condemned and destroyed by State authorities, after reaching their destination, such being no longer under United States jurisdiction. For this reason State legislation has, to a great extent, at least, up to this time, been somewhat like putting the cart before the horse, in that it has been made the basis, whereas, national legislation should be obtained first and State legislation made supplementary thereto. I do not believe we can solve the problem in any other way, and for the first time in the history of insect legislation in this country, we are on the right track.

Laws are beneficial if they give to the majority certain privileges which will better their condition, even though such laws may work a small hard-

ship to the minority, and to these may be detrimental. Such laws are practical if they can be enforced without being detrimental to the welfare of the majority. Thus a road may be built, a canal dug, or buildings erected if such are a public benefit, even though such may be detrimental to the individual. The question to be first solved in insect legislation is, will it protect the interests and welfare of the public without crippling or materially injuring one or more industries. If not, it will neither be beneficial or practical.

Injurious insects, though not articles of commerce in the true sense of the word, yet become so closely associated with such articles as to make it impossible to divest the one from the other without restricting commerce to such articles as are, so far as can be determined, free from injurious insects. That is, we are obliged to legislate respecting the host in order to avoid the parasite, just as we quarantine the man to escape the contagious disease with which he is afflicted. Can we do this in the case of seriously injurious insects, and if not, why not?

Those insects which are the most likely to affect the interests of the Pomologist are, almost without exception, transported from places widely separated to other localities, often as widely apart, either in or upon fruit or what is generally included under the general term nursery stock, and to legislate carefully and judiciously in a manner to avoid the pest and not interfere with the traffic in the uninfested fruit or nursery stock, though no easy matter, does not, it seems to me, invoke any greater problems than have been solved again and again by the American people, and in a practical manner.

It is unfortunate that among our legislators, both National and State, few if any have any knowledge of insects, fruits or nursery stock, but do have an excess of self esteem and a tendency to meddle with things that would be best aided by being left alone. If a satisfactory measure is introduced, unless it is watched during its progress through congress or legislature, it is liable to be revised and remodeled and amended by incompetent men, until it is largely shorn of its usefulness. It is this that, as I fully believe, causes some of our prominent nurserymen to hesitate in invoking the aid of legal enactments in protecting them from imposition, or from the danger that may come to them through importing dangerous insects with their stock, or protecting them from their careless fellows.

What is wanted then, is, first, a national law that shall apply to interstate and international commerce in fruits and nursery stock, supplemented and sustained by as uniform State laws as it is possible to get. A law that serves everyone alike is not likely to prove injurious, if framed by men who have the best interests of the people at large at heart. So, whatever measures may be presented to either congress or State legislatures, it will be well to keep a sharp lookout that in sending our grist to mill the miller does not give us some one else's flour. If fruit growers and nurserymen will only decide upon what will be the best measure for them as a whole and then stand together in demanding it, there will be little danger of not getting what is demanded.

But what shall we demand? Just now this is the puzzle that is bothering us the most seriously. Some nurserymen are opposed to any legislation, for reasons best known to themselves and some entomologists oppose legislation for reasons best known to themselves, while fruit growers, at least many of them, do not care, so that it does not affect them.

Last March a bill was prepared in Washington, D. C., by a committee

elected by a delegate body in which all branches of Pomology were fairly well represented. The bill was never considered perfect by those upon whom the duty of its preparation devolved, but it was the best that they could do in that direction, within the time allowed them, and was unanimously endorsed by the body which gave the committee its authority to act. More recently, the American Association of Nurserymen appointed a committee, comprising three of its members, to draw up another bill, which they did, and it was unanimously adopted by that body, as representing the desires of the members. Now we have here two bills drawn up by two committees, representing their respective bodies, and every one of these committee men were deliberate and judicious in their acts, and I fully believe, labored honestly and faithfully for that which they considered would be for the greatest good to the greatest number. The two bills are as near alike as two peas in a pod, except that one is a little less lengthy, and covers slightly less ground. Now, it would seem that from these two bills we might determine pretty near what was wanted.

Do we want inspection of nursery stock brought into this country from other countries? Both bills answer in the affirmative, so we may consider that point as settled. Where shall this inspection be made? Here the bills differ. The bill drafted in Washington says that the government shall provide inspection at certain ports of entry, to be designated by the Secretary of Agriculture. Now, articles of commerce between States or of an international character can be inspected by government officials while it is still in transit and before it has reached its final destination, as, once it has been delivered to the consignee, it ceases to be amenable to government regulations and becomes a part of the State in which its place of destination is located, and there can only be inspected by State officials and under the regulations governing the State in which the inspection is to be made. Furthermore, as soon as a national inspector enters within the boundaries of any State, his mantle of authority drops from his shoulders, unless such State, by legislative action, has given to his department of the government service the right to enter it and carry out his official duties there, unless this should happen to be a designated port of entry. Thus, while the unpacking and repacking and inspection of imported nursery stock at these ports of entry, unless the handling was done by expert packers, might seriously affect such stock, it is really the only way that it can be legally done in this country by a government officer. Besides, any one who has ever attempted to inspect such stock, as it is removed from the original cases, covered by dust, finely pulverized soil and moss, will fully comprehend the extreme difficulty of detecting minute organisms until this debris has been washed off, and even then he must have a wider knowledge of the injurious insects of the world than any one of my acquaintance, in order to be able to determine every one of them with the necessary exactness.

The bill drawn up by the committee of nurserymen would compel the inspection of imported stock "in the hands of the owner, and before reshipment, sale or planting out." It certainly seems to me that this clause would invalidate the whole bill, because, in the hands of the owner, it is beyond the control of any act that Congress could pass, and no government inspector has any right to go into a State to make an inspection, even if it were still within the jurisdiction of interstate commence, unless, as before stated, this right has been delegated by legislative action or the locality of destination happened to be a designated port of entry. Besides this, if inspection is done while the stock is in transit or in the hands of the consignee, the

latter must stand whatever loss might be occasioned by reason of delay, destruction of infested stock, and, except in case other provisions had been made, the expense of inspection. This, it appears to me, will be an injustice to the importer.

I have never been able to make it clear in my own mind that inspection of imported stock can be done thoroughly, practically and with justice to the consignee, except in the country where such stock was grown and immediately prior to its shipment to this country, and a certificate of apparent freedom from seriously injurious insects or diseases should operate to remove any further delay between consignor and consignee. I fully believe that if it were known in advance that this country had enacted certain laws compelling inspection and certification before stock would be permitted to enter our ports, such would be provided by foreign consignors very promptly and willingly. They are not likely to kill the goose that lays the golden egg, without reason.

In regard to the management of nursery stock grown in this country, both of these bills agree in prohibiting from interstate commerce everything that has not been inspected and found to be free of dangerously injurious insects and diseases. The bill prepared by the nurserymen's committee does not provide for the transportation of stock coming from an infested nursery, even after being fumigated, nor does it provide for any other than government inspection, in extreme cases, like delay in the proper official reaching a nursery, as does the bill drawn up in Washington—changes that are rather more severe, though probably safer than as laid down in the latter bill. Here again we encounter the difficulty of getting inspection, by government officials, of property lying wholly within the jurisdiction of State governments. The committee which prepared the bill in Washington hoped to obviate this difficulty, in most cases at least, by having the Secretary of Agriculture accept the inspection of Station and State Entomologists, and only provide official inspection where no such officers were found. As it would be manifestly unjust to provide such freely in one State and not in another, the committee followed the present usage and decided that all inspection should be made at the expense of nurserymen. There seems no reason why the government might not provide free inspection in every State, provided each State would take the proper legislative steps to surrender to the government their respective rights to object to such government inspection.

Now, it seems to me that we are very much in need of both National and State legislation, not only to complete the continuity of legislative acts, but to bring about a certain uniformity in the effect of this legislation, and put an end to the unjust and in many cases worthless State laws that are being enacted. It would certainly seem that in these two bills, prepared by representative men, who have reflected the sentiments of a very large per cent of the fruit growers and nurserymen of the country, we have ample material which we might combine into one, retaining the best features of each, and thus be able to present to Congress the very best that can be devised, without actual experimentation.

So far as the bill drafted by the committee from the National Association of Nurserymen is concerned, aside from the defects which I have pointed out and which seem to me to be against the nurserymen's interests and may be easily eliminated, it would appear that it is about the best we can do, so far as nursery stock is concerned. In fact, the two bills, though differing in the phraseology thus far, mean almost exactly the same. That

a bill including such provisions, as are here recommended, would be of great benefit and practical utility, we have but to point to the effects of nursery inspection now being carried on throughout several States, which is, I think, working all right, and though entomologists are not by any means infallible, comparatively few serious mistakes are made, few nurserymen there are who are acquainted with the nature of San José scale, but what breathe easier after they have had their premises inspected and been found free of this terrible scourge.

To this bill, however, it seems to me should be added such a portion of the Washington bill as authorizes the Secretary of Agriculture to quarantine against any variety of foreign grown fruit that is being brought into this country, and known to be infested by any seriously destructive insect or disease that has not become generally diffused over this country, and is likely to be thus diffused by such importations and to destroy or seriously damage our home grown fruits. Divested of all technicalities, this simply means that a cabinet officer of this government, who has the oversight of agricultural and horticultural interests in charge, shall be on the watch for injurious insects and diseases that occur in other countries, and when he sees one headed this way, and feels sure that it will do us serious injury if allowed to become established in our orchards, he shall have the power to close the gates and keep it out. Surely this is not only good statesmanship, but good common sense. Besides, it is just what other nations are doing.

With domestic grown fruits it is different, because the volume of interstate traffic in these is so enormous, and the perishable nature of these fruits is so marked that a small army of men would be required to examine and pass upon these fruits with sufficient rapidity to prevent great damage and loss by reason of such inspection. Besides, I certainly know of no better way of preventing the spread of pests of this sort than by suppressing them in the orchards where they occur. If there is to be any legislation in regard to infested home grown fruits, let it be as against their production. This cared for, no infested fruit will be found on the market. I may here repeat what I have stated again and again, viz., that there has never been an outbreak of the San José scale traced to the introduction of infested fruit. There is seldom any trouble in locating the blame, and it has invariably been found in some form of nursery stock—in fruits never. Take care of the orchards and the fruit will take care of itself, and if this is followed abroad we shall have no occasion to quarantine against foreign grown fruits.

As I stated in the beginning, the problem of insect legislation is not an easy one by any means, but we are known as the most practical and ingenious people in the world and it will be indeed strange if we cannot grapple with this problem and settle it in a practical way and one whereby we shall derive substantial benefits therefrom. Let us decide what we want, and then see to it that our law-makers give precisely what we ask for. No matter how popular a measure may be, there are always more or less stragglers who require the sharp prick of the law to keep them in line, and prevent the really deserving from being injured by the disreputable and unworthy.

DISCUSSION.

Mr. Periam: I do not rise to discuss the subjects presented in these papers which have been so ably presented. I want to make a short statement of our condition in Illinois. We received this scale last year from two

nurseries in New Jersey. They have strayed from the fruit trees and infested the osage orange and the willow. Now the question is, if this has infested a good many trees and shrubs whether we can ever get rid of them. Our Horticultural Society and our State Entomologist have taken up this matter in the infested localities in Illinois. Our scales came from New Jersey and from California. The question is a serious one, but we think we can get rid of them. The impression is that they are usually carried by birds. The importance of the subject is such that the National and State governments should work to keep these pests out, and they should work together as one. Governments can do what individuals can not do alone.

Prof. Alwood: I was present with both committees when they drew these federal bills. I do not believe either committee thought they had a perfect bill, but they hoped to compromise and make a fair bill. We heartily agree with Prof. Webster in his criticism. We could not get a perfect measure, but we hope to present a perfect bill in December.

Prof. Craig: I want to say that this was a stock on which your legislators failed to put a tariff. Not having been restricted by a tariff, we got a large portion of this stock over in Canada. Now we are struggling to know how to get rid of them. We are going to drive these insects out, if possible, by legislation. We shall endeavor to get legislation just as restrictive as possible. Indeed, we propose to make that legislation strict enough to suit even an Ohio man. Of course, we do not have to thank Ohio for this stock, because we get it from States nearer home.

Prof. Alwood: I would like to ask the gentlemen if the Canadian government would accept certificates from our government on nursery stock?

Prof. Craig: I do not know in regard to that. We are endeavoring to make stringent laws in regard to these matters.

Prof. Taft: I have a law relating to scale and other insects that would fill all the requirements laid down by Prof. Alwood. It was passed by the last legislature of our State and was recommended at a convention held at Chicago last winter. While not perfect, yet if we had a national law it would be a perfect measure. It places this whole matter in the hands of the State Board of Agriculture and the whole of the funds of the State are available to protect us. It requires the railroad companies to notify the inspectors of the stock in their hands and they can then inspect it or not, as they choose. We have also a spraying law which is designed to protect us.

Dr. R. C. Kedzie presented the following paper:

FERTILIZERS AND FRUITFULNESS.

BY PROF. R. C. KEDZIE, AGRICULTURAL COLLEGE, MICHIGAN.

The first home of man was a garden, in which God placed "the man to dress it and to keep it," and the garden still lies near the bounds of that primal home of innocent pleasure. The fruit of every tree was given him for food, except the tree of knowledge, of whose fruit we do not seem to have eaten enough to know how to dress the garden and keep it, but year by year we are learning more and more of the secrets of vegetable life, and

how to adapt our efforts to the alchemy of plant life by which earth, air and water are transmuted into vegetable gold in ripened fruits.

The early botanists, fixing their attention upon the great excess of organic or combustible matter in plants, considered these as the essential elements of vegetable growth, and regarded the ash or mineral elements as unimportant and accidentally present in the plant because they were in solution in the soil-water taken up by the plant and left behind when the water evaporated, like the scale in steam boilers.

But later investigations have shown the masterful influence of certain mineral substances in plant growth; that without these ash elements the formation of organic matter is impossible, and potash, lime, phosphorus and sulphur constitute the "philosopher's stone" to effect the transmutation of dead matter into ripened fruit. It is this ministry of chemistry to botany that is securing the most marked advances both in the theory and in the practice of agriculture in its broad sense, of soil production.

The conception that certain quantities of several mineral elements, small in amount and at first regarded as of no importance, must be present in all forms of plant life, and that the internal changes of the plant are presided over and governed by these chemicals, is only beginning to enter the minds of the mass of cultivators of the soil. Many persons consider it absurd that the presence or absence of a few grains of potash or phosphoric acid should make the difference between success and failure in the development of a plant. "Our fathers did not worry over these trifling chemicals, yet succeeded in raising crops. Why should we?" But nature's chemistry was in advance of the former and paved the way for his success. The chemistry of plant growth is as fixed as the law of gravitation, and whether we recognize it or not, it works with us or defeats us, according as we cooperate with, or disregard its principles.

THE ASH OF PLANTS.

Out of the seventy elementary substances known to the chemist, nine are always found in the ash of plants grown under natural conditions, and the plant obtains these entirely from the soil. Not all the mineral substances found in the ground are of importance as food for plants, the great mass of the soil being of no importance beyond affording the physical conditions favorable for plant growth. Of the nine ash materials always found in plants, four may be safely neglected because of their abundance, and only five demand serious consideration by reason of their importance in the functions of plant life, while two of these require special attention for their superlative importance in plant life, and because they exist in most soils in small amount, are used by plants in large amount, and are soonest exhausted in the soil by cropping. These are potash and phosphoric acid. In the absence of either of these, plant life is impossible, and a restricted supply correspondingly limits plant growth.

ASH OF AIR PLANTS.

During the past year I have enjoyed a spicy controversy with a cultivator of orchids about the essentialness of potash and phosphoric acid for air-plants, who asked, "If these materials are essential for all plants, where do the air-plants get their ash?" Investigation showed that whatever may be the source of supply, the air-plants always contain these ash elements, and usually in about the same proportion as terrestrial plants, and when the

supply of ash is too small the orchids decline and finally starve for want of ash-food.

THE THREE MANURIAL ELEMENTS.

If we add available or combined nitrogen to potash and phosphoric acid we have the three manurial elements of superlative importance in plant feeding, and the supplying of which, directly or indirectly, is the great problem of fertilizers. The other ash elements, lime, magnesia, sulphates, etc., are in such abundant supply in ordinary soils that no attention is given to them in ordinary manuring. In buying commercial fertilizers, only these three substances are considered in estimating their money value.

I need not discuss before this audience the subject of farm-yard manure, because you recognize the value and uses of this complete and all-round manure, containing every element of plant food in available form. "The dung heap is the pivot of successful agriculture."

SPECIAL FUNCTIONS.

Let us briefly glance at the special functions of these three manurial materials:

1. *Combined Nitrogen* in the form of ammonia, nitrates and organic nitrogen, is an element of great importance in plant growth, and its function is significant, the highest products of plant life being rich in nitrogen. Growth at all times requires it, and when it is supplied in abundance the growth is rank and luxuriant as shown by the dark green color of the leaves. When active nitrogen is in relative excess there is an abnormal development of leaf and fibre, and the fruit forming process is checked. In 1851 Ville of France announced that green-house plants were greatly promoted in growth by a very small amount of gaseous carbonate of ammonia in the air, secured by placing lumps of the salt on the hot-water pipes of the green-house. He stated that the effect of the ammonia absorbed by the leaves was to increase the formation of leaf and fibre, with arrest of fruit formation, the flowers becoming sterile and falling off, and no flower buds forming for the time. The color of the foliage became dark green, and the plants exhibited great vigor of leaf-growth. A similar riotous growth is shown when nitrates are too freely applied to the soil.

By itself, therefore, active nitrogen tends to the excessive formation of leaf and fibre, but when combined with the requisite supply of phosphoric acid it tends to form the most highly developed forms of plant life, the albuminoids and nitrogenous materials of every class.

2. *Potash.* We do not know all the functions of potash in vegetative growth, but it is well understood that the formation of the hydrocarbons, starch, sugar, woody fibre, etc.—the formation of vegetable matter—cannot take place in the absence of potash. This material, therefore, holds the very gate of life for the vegetable race. The assimilation of carbon and formation of organic matter require the presence of potash and even the nitrogenous compounds require its aid.

An adequate supply of potash seems to promote the production of short-jointed and stocky growth.

3. *Phosphoric Acid.* The chemical element that lies nearest to life is phosphorus. No growth is possible in its absence, for the chlorophyll cell by which the plant obtains carbon from the carbonic acid of the air, cannot be formed in the absence of a phosphate. The Germans have a saying, "No phosphorus, no life." In the earliest development of life and at every

subsequent stage, phosphorus is the handmaid of the living principle. Not only does phosphorus seem to come nearest in touch with the living principle and to be absolutely essential to its existence, but the presence and action of this element throughout the life of the plant seem to greatly promote its evolution. The more highly organized the form of life, the more abundant is phosphorus. Brain and nerve, muscle and blood, leaf and seed, all contain this element. It is the *light carrier* of life.

Phosphoric acid and potash are the principal constituents of the ash of all young plants, and in the ash of seeds they are still the leading elements.

One striking influence of phosphoric acid is the tendency to promote early maturity, so as to secure the ripening of grapes, melons, etc., before the advent of untimely frosts of autumn. The skillful gardener may thus obtain a crop and in such season as to command the extra price for early fruit.

Another influence is the tendency to promote the formation of flowers and fruit in place of rank, leafy growth. Perhaps an instance in orcharding may make this point plainer. A farmer on the shore of Lake Michigan had set out a large orchard of pear trees, which grew vigorously from year to year till the trees were of large size, but bore no fruit. Weary of seeking fruit and finding nothing but leaves, he asked me what to do. I called his attention to this tendency of phosphates to promote fruit-bearing and advised him to give the orchard a good dose of plain superphosphate, which he did. Soon after he sold his farm and moved to the Pacific slope, and I lost tract of the experiment. Three years ago in an address before the Michigan State Horticultural Society I spoke of this experiment and regretted that I had heard no report of results of this use of superphosphates on the fruitless pear orchard, when a gentleman in the audience stated that after the dose of superphosphates the orchard produced a crop of pears in a single year that sold for enough money to pay for the whole farm.

Phosphoric acid may cause fruitfulness in two ways. (1) By inducing the formation of flower buds, or (2) by securing increased vitality in the pollen to insure fructification of the flowers as a necessary condition for fruit. Both offices are necessary and for both of them phosphoric acid is required.

SEED FORMATION.

The supreme effort of all forms of life seems to be the perpetuation of their species. The shorter the period of life in any order, the greater the fecundity. Witness the rapid reproduction of the brief forms of life, such as insects and annual plants, the rapid increase of children in families of consumptives, and of the under-fed.

So where there is a checking of tissue growth in plants, hinting at a closing up of existence, flower buds appear in place of leaf buds, and seed-formation by fruit is the effort of the tree to perpetuate its kind. Pomologists have long been familiar with the fact that ringing the bark of a limb, or constricting it with a wire, will tend to produce flower-buds. The same effect is produced by marring the bark of the trunk. It has been supposed that by preventing the return of the sap from bough to root, there was in the branches an accumulation of elaborated food which aided in developing fruit buds. A curious illustration of such enrichment of the sap was accidentally shown by girdling some maple trees on a farm in Eaton County, Michigan, many years ago. The trees were girdled in the summer,

and the next spring these trees, with others, were tapped for sugar making, when it was found that the sap from the girdled trees contained three times as much sugar as that from other trees in the same sugar-bush. These garroted trees furnished an abundant store of food to nourish a large crop of seeds in their last and dying effort to perpetuate their kind.

But fruitfulness by exterminating sacrifice is poor practice in orcharding. We need to look for methods for developing fruitfulness without impairing the vigor of the tree. The bi-sexual arrangement in all the higher forms of life, both animal and vegetable, is well recognized, and the pollen is taken as the male element in the fecundation of flowers.

"THE POLLINATION OF PEAR FLOWERS."

A very valuable paper on this subject was prepared by M. B. Waite, special agent of the Department of Agriculture, and published as Bulletin No. 5, of the Division of Vegetable Pathology. An orchard of about 22,000 trees of Bartlett pears was planted in Virginia, and although seventeen years old the trees had never borne a satisfactory crop of fruit, though they blossomed freely year by year. A few trees standing near pear trees of another variety had borne good crops of fruit, but the Bartletts on the whole were unfruitful. The results of Mr. Waite's investigations brought out the fact that while many kinds of pear trees are self-fertile, the pollen of each tree fecundating its own flowers, the Bartlett was practically self-sterile, and its flowers must be fecundated by the pollen of some other variety to produce a full crop. The curious fact was also brought out that while the pollen of the Bartlett is impotent for its own flowers, it readily fertilizes other kinds. The attention seems to have been directed more to the influence of the cross-pollination than to the potency of the pollen. The nature and properties of the pollen itself would seem to demand attention.

COMPOSITION OF POLLEN.

I find only a few analyses of pollen, and these mostly of the pollen of the pine. The analysis by two Russian chemists of the pollen of *Pinus sylvestris* shows 15 per cent of crude protein and 62.11 per cent of phosphate of potash in the ash. Von Planta found 16.56 per cent of crude protein, and analysis of the pollen of the Austrian pine in this laboratory showed 17 per cent of protein. Von Planta found 28 per cent of crude protein in pollen of the hazel nut (*Corylus Avellana*). What further variation will be found in the composition of pollen of different orders of plants I cannot say, but I am trying, with the assistance of Mr. Gunson, the College florist, to gather different pollens for analysis. But enough is found to show the highly organized nature of pollen—richer than the best quality of wheat flour, both in nitrogenous matter, potash and especially phosphoric acid.

POLLEN FORMATION EXHAUSTIVE.

The formation of so highly organized a product must exhaust the plant when formed in large quantity. Many years ago I sailed through the innumerable small islands in western Lake Michigan. They were covered with a dense growth of pines, which had shed their pollen to such an amount that the water for scores of miles was covered with pollen so as to cloud the water like the snow-sludge of early winter. Some of the crew

were sure there had been "a shower of sulphur," but when the stuff was gathered and examined, it was only pine pollen. If a like quantity of wheat flour had been scattered over the lake, every one would recognize the waste. The shedding of this enormous amount of pollen must have exhausted the trees for a time. Indeed, botanists tell me that a period of comparative rest follows this excessive production.

POTENCY OF POLLEN.

The question whether pollen of the same species varies in composition and whether its potency is in any way related to its chemical composition is a subject of deep interest. It may be objected that the potency of pollen is the result of organization—quasi vital—and in no way related to its chemical composition. Well, that is just what I want to find out. Is the pollen of a given kind of plant always of the same fertilizing power whatever the vigor of the plant producing it, and irrespective of its chemical composition? Will the pollen of a weak plant have the same influence over the fruit fructified by it as the pollen from a vigorous and highly developed plant?

INFLUENCE OF THE MALE IN STOCK-BREEDING.

"The bull is half the herd" is a maxim of the cattle-breeders; and one chief factor in improving stock is the use of a mate of highest quality. Scrub stock is graded up chiefly by the use of the pure-bred male, and the elimination of scrub pollen may be one factor in improving fruit. Pomologists seem to think that pollen is pollen, and that it matters little what its quality.

The experiments on the pollination of Bartlett pears are suggested when they show that self-pollination is usually inefficient and undesirable, while cross-pollination gives the best results both in certainty of fecundation and in the character of the fruit. A question lies back of all this, viz., the quality of the pollen as affecting its potency. It is well known that in a cold and rainy spring the flowers often fail to set "because the rain washes away the pollen," or "the bees and other insects are inactive because of the cold." May not this unfruitfulness arise from the poor quality of the pollen by reason of the deficiency of warmth and sunlight, or because the parent plant was insufficiently fed to produce pollen of high seminal quality? The analogy of animal life points strongly to this last cause.

Pollination is something more than fecundation, not only securing the setting of the fruit, but markedly affecting its size, shape and quality. Prof. Munson of Maine has demonstrated that "the amount of pollen applied may have great practical importance in determining the form and size of the fruit, as well as the quantity produced."

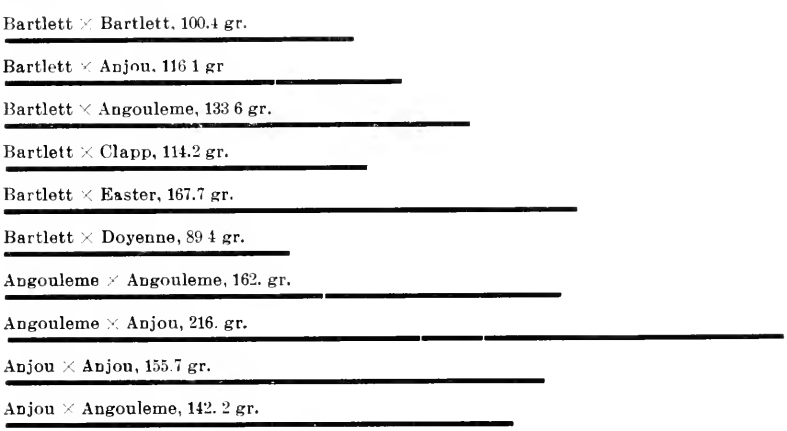
R. M. Kellogg of Three Rivers is an authority on small fruits in our state. In an article on Plant Breeding in a recent number of the Michigan Fruit Grower, speaking of strawberries, he says: "Further study convinced him that inasmuch as the seeds were the eggs of the plant and that the fruit or pulp grew only as a receptacle for the seeds to grow in, and whenever the seeds were weak the fruit developed accordingly, so that the barrenness was nothing more than impotency arising out of excessive efforts in seed-production. * * * Every seed is born separately from an undivided pistil or female organ, which is as perfect in all its parts as those of an animal. If it does not receive any pollen, no fruit will develop, and

as stated, the growth then depends upon the vigor and potency of the pollen. If the vitality be low the fruit will be small and of insipid flavor, and dull color, while that from a pedigree plant, or one in full vigor, will be high in all these good qualities."

After reading his article I sent a letter, in which I said: "I quote from your article this significant sentence, 'The growth depends upon the vigor and potency of the pollen.' To my mind there is a world of meaning in that phrase, and I think fruit growers have overlooked the quality of the pollen as a controlling influence in fruit growing. I think we must give more attention to manuring as one of the conditions for securing prepotent pollen. Pollen is very rich in nitrogenous material, and its ash is rich in potash and phosphorus. It may be that in following out this lead we may secure more potent pollen and better fruits. What think ye?"

In his reply, Aug. 3d, he writes: "I have long felt that if fruit growers could catch the idea that the tree and vine in fruiting were breeding, and that this exhaustive process should be restricted to the ability of the plant, so that its powers should be augmented instead of diminished, that much of the poor fruit would disappear from the market. I am satisfied that a large share of our orchards and berry fields are being 'bred' to death, and lack of potency in pollen is the prime factor in the numerous failures among fruit growers."

I once more call attention to the results reached by Mr. Waite in Bulletin No. 5, which showed that the Bartlett pear was unfruitful when self-pollinated, but productive under cross-pollination. But other and suggestive facts were brought out in these investigations. Not only did cross-pollination increase fructification, but in most cases increased the size and shape of the fruit. The self-fertilized Bartlett pears weighed on an average 100.4 grammes, while the cross-fertilized pears averaged 145.2 grammes. A diagram will show the effects of cross-pollination:



These results offer a strong argument in favor of cross-pollination, but they hint at something deeper than fertilization, for when the Bartlett is crossed with the Doyenne the fruit falls off in weight from 100.4 to 89.4 grammes, and the quality and richness diminished. The Angouleme is self-fertile, giving fruit that averages 162 grammes. The Anjou is also self-fertile, with an average weight of 157.7 grammes. But when the

Argouleme is fertilized by pollen of Anjou the average weight of the pears is 216 grammes, but Anjou fertilized by Angouleme produces an average weight of fruit of 142.2 grammes.

These are facts of great significance to the practical fruit grower, and open a wide field for investigation. Pollination is something more than fertilization, and the quality of the pollen is significant. How this quality may be affected by fertilizers, and especially the relation of phosphorus to this highest product of vegetable life, are questions of great importance in pomology.

R. C. KEDZIE,

Agricultural College, Aug. 20th, 1897.

DISCUSSION.

Mr. Goodman: I want to know if increased vigor of the plant causes increased vigor in the pollen.

Dr. Kedzie: Increase in the vigor of the plant usually causes increase in the vigor of the pollen. If the plant was in a high state of vigor it would give vigor to the pollen.

Mr. Goodman: I always thought that a rapid growing tree would not produce as good specimens as a tree that is partially injured.

Prof. Selby: I am vitally interested in this discussion. I have some very intricate questions that give me trouble. It leads to a hard question in regard to practical fertilization, that is, chemical fertilization and its relation to maturity. I am often asked the question as to the possible effect the various fertilizers may have in affecting the time of ripening. I have in mind an orchard on which the question is based. It has been continuously in trees for many years. If we take the analogy from the fertilizers of grain the condition of that orchard would call for nitrogenous fertilizers. That orchard is composed of trees of a late variety and sometimes the fruit does not ripen before frost. My knowledge would lead me to say that a nitrogenous fertilizer was wanted. However, the question of effect on the time of maturity of these late varieties complicates the question and I would be glad to have information on this point.

Dr. Kedzie: My opinion is that phosphate and potash should be used. You will find that when a plant is in the vicinity of a manure heap it ripens late. In Great Britain, where they use more phosphate than we do here, it has been used to hasten ripening. For early ripening I recommend phosphates. We have crops in our state that are destroyed by frosts. I recommend phosphates in such cases, as it gives a quicker development.

Prof. Selby: How does it affect the growth of the tree?

Dr. Kedzie: It does not give an excessive growth as in case of nitrogen or ammonia.

Prof. Selby: Would you recommend the soluble or the insoluble phosphate?

Dr. Kedzie: I would recommend the superphosphate.

The author presented the following paper:

THE ROOT GALL PROBLEM.

BY PROF. A. D. SELBY, BOTANIST, OHIO AGRICULTURAL EXPERIMENT STATION, WOOSTER, OHIO.

Is there a real problem for fruit growers in the occurrence of enlargements or tumors upon the roots or crown of the plant and less commonly upon the trunk at some distance above the soil line? Do their occurrence menace the life and productiveness of the plant bearing them? And, if so, is there danger of increased spread of the conditions? To all these questions I think we may give an affirmative answer. Furthermore, the problem affects wide areas, although having somewhat variable conditions. The growths in question are morbid and tumor-like in nature; they are composed, for the most part, of soft, corky or spongy tissue, such as might be expected from the continuous operation of some irritant upon the living parts of the plant under ground. In nearly all cases they are newly formed with each season's growth, dropping loose and decaying while the next ones are being developed. This condition certainly holds for the peach and raspberry galls growing under ground, though less certainly for those of apple and pear. Upon the plum they more nearly resemble those of the peach. Enlargements of this indicated character are known to occur in Ohio upon raspberry and blackberry plants, upon peach, plum, pear and apple trees, and upon Carolina poplar. Elsewhere, notably upon the Pacific slope, they are reported upon grapes and roses. We may look for them upon some other trees and shrubs. They are already common upon pear stocks from Europe and on plum stocks from Georgia. The photographs and specimens[1] will give an idea of the appearance of the enlargements upon raspberries and upon peach and apple trees. Upon blackberries and raspberries the galls are much alike, while the tumors on pear roots are similar to those upon the peach. Very similar growths occur upon the roots of the herbaceous *Begonia rubra*.

The texture of the enlargements changes greatly in drying, but when examined in a fresh state they are commonly soft. In the peach they are found, as stated, upon the roots, upon the stem at the crown, and with those below are associated similar growths at some distance above the ground. The same condition holds for raspberry plants. There is a distinctive character about the growths which should lead to prompt recognition when all parts are exposed for examination. The exterior of the gall is rough and warty, while the transition to healthy tissue is sudden and abrupt. Such a gall one inch in diameter may occur upon a small root, while I have seen one eight to ten inches in diameter upon a poplar two to three inches in diameter. My examinations have chiefly been made upon young trees.

The term crown gall and root gall, with other names, have been applied to these growths; crown gall is, perhaps at present, the least misleading of all that are much used. The only serious objection being the quite general use of the term "gall" to designate a growth about an insect egg or larva. In this paper it is intended to mean an enlargement due to morbid growth, without implying an insect origin. Tumor may have some advantage as a name over that of gall, but I think under present usage we may employ the

[1] Exhibited during presentation of the paper.—Sec'y.

name root gall or crown gall with little risk. It was Woodworth[1] who suggested "crown gall" as a suitable name for the trouble in order to distinguish it from the small nematode galls usually called root galls. On the Pacific slope nurserymen formerly spoke of this disease as black-knot.[2] As before stated, the growths are limited to neither root nor crown.

CAUSE OF ROOT AND CROWN GALLS.

The cause of these galls, for the class in general, is yet an open question. Commonly, as stated, the galls are newly formed each year and we may find both old and new ones upon an affected peach tree, the old dead or decaying, the new fresh and growing. Moreover, when the galls are evident only upon a small root, the removal of the root and gall does not appear to dispose of the trouble. The galls follow upon the crown or other roots. Excision and sterilization of the wound with sulphur has not prevented the reappearance of the galls upon several affected trees which were treated. Dr. E. F. Smith[3] has suggested that some organism irritating the tree at the point of gall growth might account for the disease, and that animal organisms should be sought for. Woodworth[4] and Toumey[5] support the parasitic and contagious nature of the trouble. So far as known to me, microscopic or culture examinations have been without definite results in discovering a constant parasitic fungus or bacterium in fresh galls. None has been shown in the several plates made by the writer or in the many examinations of sections and the like.

Eelworms referred to species of Heterodera occur in raspberry galls like those found especially on Thompson Prolific. They are present in such numbers and with such constancy as to suggest a causal relation. Certain eelworms or nematodes, to be sure, are found in decaying vegetable matter, but in this case just cited they were in the youngest galls below the ground. Hard, stem galls above the ground on some of the same plants showed no organisms. The nematodes may apparently be one of the causes of the galls, at least on the raspberry. The apparent greater frequency of such root galls upon peach trees and perhaps other sorts grown in the milder climates seems likewise to support the same suggestion as to their origin. I have recently met with an interesting case in a few nursery rows raised in a grower's berry patch in Ottawa County, Ohio. In one or two of these rows, lying somewhat low and in dark, black soil, a large per cent of the trees were thus affected the next June after budding. These trees were all orchard volunteers transplanted while very young. But in the part of the rows where the disease prevailed worst an excessive application of dried, lumpy, cow manure had been made about three years before. An excess of partly decomposed organic matter was found about these roots. Nematodes were abundant in the exterior gall tissues and apparently in the newer parts of the new galls; as to the latter point it was difficult to determine. I have specimens of these.

Healthy peach trees were planted, by the owner's permission, in a raspberry plat at Berlin Heights, Ohio, suffering from nematode root galls. At the end of thirteen months after transplanting 20 per cent or more of these

[1] Bulletin 99, California Experiment Station.
[2] Smith, E. F., Jour. Myc. vii, 396, 1894.
[3] Jour. Myc. vii, 376.
[4] Loc. Cit. Also Report Cal. Exp. Station. 1895
[5] Bulletin Ariz. Exp. Station II. 1.

surviving peach trees are similarly affected with what is not manifestly different from the root and crown galls found upon other affected peach trees. With the lot of peach trees exhibited a raspberry plant was found affected in like manner. The evidence given indicates some casual relation between the nematodes and the root galls. The disease has been communicated in one or two cases from affected to apparently healthy peach trees transplanted to fresh land at a distance of about eight inches from each other.

How we can harmonize this hypothesis or inferred cause with other observed conditions I am not prepared to state. The formation of the stem galls at the same time and on the same plant presents a difficulty. The existence of a gall-forming tendency in the tissues of the plant, as of the peach after the excision of a small affected root or the removal of a medium sized gall at the crown, would scarcely be supported by the naked nematode hypothesis of cause. Yet the larger part of the foregoing statements require the existence of a parasitic, or at least some external organic cause or causes. I shall not be surprised should we learn in time that there are two or more causes working conjointly.

EFFECT OF THE DISEASE UPON THE TREES.

The trees affected with root gall trouble seem fatally diseased, and several years' observation seems to warrant the conclusion that any peach tree or raspberry plant so affected at transplanting age will not come to successful fruiting. I have at hand a letter from a Georgia nurseryman and fruit grower, who asserts in it that nine-tenths of Georgia peach trees of bearing age in his region (South-Middle Georgia) are to some extent affected with it. However the trees may survive it in other states, Ohio peach trees conform to the statement first made and do not come to bearing nor continue fruiting when suffering from root or crown galls. The disease communicates itself to surrounding trees in close proximity. Whatever be the sufficiency of any hypothesis as to the cause of crown gall the effects of it are sufficiently injurious to place the trouble in the foremost rank among plant diseases. It is now working much more havoc among us than peach yellows and to me it appears the most menacing of all the pests and diseases now threatening the fruit grower. I believe that it will settle the question of raspberry and blackberry planting among orchard trees and change other common practices.

The crown gall seems to originate commonly in the nursery rows, and its effects are transplanted to the orchard. I know of one lot of 1,500 peach trees in Ohio, transplanted in 1895, of which, to the best of my judgment, 50 per cent are at this date either dead or hopelessly diseased with the galls. The responsibility rests with the trees, we may say, but not recognizing them as responsible beings, shall we not have to take the grower and seller as the responsible parties? I believe that we must do so.

WHAT OF AFFECTED NURSERY TREES?

Since the nursery tree is the chief, if not the only factor in the infection of a new orchard or of new land, the purchaser of trees and plants must protect himself in buying them. For Ohio there is apparently good evidence that trees affected with root or crown gall at transplanting will never bear

a good crop of fruit. Not this alone, but the communication of the trouble to peach trees from raspberries and other evidences of a communicable nature just cited would lead us to fear its introduction into orchards or into orchard lands. In my judgment, therefore, nursery stock affected with root or crown gall is worse than valueless to the purchaser; it is both an immediate and a prospective injury and damage. Such stock, whatever be its sort or variety, should not be placed upon the market. It is unworthy of valuation as an article of commerce. Furthermore, a person who buys it is wronged. Stock affected in this manner should be denounced.

WHAT IS AFFECTED NURSERY STOCK?

We may safely say that all stock having the galls upon the root or stem is affected. There are a good many evidences of the existence of disease in trees grown in proximity to trees having such galls. The limit of infection is difficult to prove, but the deciding evidence of such infection, in a given group of trees, can be determined by a blind man. By this is meant the determination of the presence of excrescences upon the roots and crown at digging. Certainly it is possible to know, if one wishes, of the presence of crown gall in a block of trees, when tested by the existence of these excrescences. For a tree grower or tree dealer to claim ignorance of the existence in such trees as I have seen offered for delivery, with from 4 to 8 per cent of them having conspicuous crown galls, is to acknowledge that he had not examined the trees. We must have reform through some channel or the Ohio grower will not long continue to purchase trees.

HOW TO SOLVE THE PROBLEM.

I have already indicated the solution, as it seems to me, of the commercial problem of crown gall: It is to let no affected trees go upon the market. There may be better methods of securing this result than the one proposed, but if so, they have not presented themselves. I know that our fruit growers will, most of them, have this well in view when buying trees. The trees sold must be free from disease upon delivery. I have been trying to determine where certain diseased peach trees that have been planted in Ohio were grown, but have not succeeded, after a goodly amount of earnest effort. I leave that sort of tracing to some one who finds it more interesting and profitable than I have found it. But it seems clearly necessary to denounce such affected trees whenever and wherever the question is raised, and that is the course determined upon for a time.

DISCUSSION.

Mr. Goodman: How far does this extend in other States?

Prof. Selby: So far as I have been able to trace it, the men had bought their trees in different States.

Alwood: Have you a case against the Virginia nurserymen?

Prof. Selby: Well, some of them said that their trees came from Virginia.

Alwood: I do not find it in Virginia nurseries, and if you have a case I wish you would report it to me.

Mr. Lindley: I have raised many peach trees, but I never knew of this disease, although I have heard of it.

Prof. Craig: So far as I can learn we got this disease from Ohio.

(Laughter.) I learned from the discussions a while ago that you were in a bad way in regard to spraying and now from what I have learned recently you seem to be in a bad way in regard to the root gall. You remind me of that old story you all know so well, the boy's composition on flies. What I want to say is that when you get tired of fighting these things, then come to the land where they do not exist.

As Prof. Craig found it necessary to leave before the evening session he was invited to make such comments as he chose upon the collection of Russian apples which he had brought from the Central Experimental Farm at Ottawa.

DESCRIPTION OF RUSSIAN APPLES ON EXHIBITION.

Prof. Craig: I noticed on the program that you were to have a paper on Russian Fruits by Prof. Taylor of Nebraska. I thought you might want to see some of these specimens (referring to the collection on exhibition), and so I brought them over. I want to say that I am not exploiting any Russian apples, nor am I prejudiced against Russian apples. I believe, however, we have varieties that are of great value in the North and that would be valuable to you in Ohio. The nomenclature of the Russian apples is in hopeless confusion. Many of these apples have been grown from seeds and their seedlings all resemble each other. The Gibb is of the Yellow Transparent type and a beautiful but small apple. The Duchess family is another family out of which we will get some valuable apples. We have had them at Ottawa, with a winter temperature which drops below zero and stands between fifteen and twenty below for weeks at a time. Another is the Red Anis. This variety will not, in my opinion, do any good in any part of Ohio or in the Mississippi valley. But where they grow it is a good keeper and will last until March. The Alexander family we do not regard as of much account, from the fact that it drops early and is not equal to Ben Davis. It must be marketed early or it perishes, and that is against it. The Switzer is an apple which can be grown in this locality. Its quality is, I think, better than the Duchess. I have given you some points in reference to this Russian apple question and leave you to view this matter carefully.

Mr. Goodman: Do you think there is a type that you could use as a basis to develop something else from that would be valuable in our locality?

Mr. Craig: We find in growing seedlings that the vigorous seedlings are summer apples and very short lived. This points to the other side of their usefulness. In fact their usefulness is pretty largely confined to points north of the forty-fifth parallel, but we hope by crossing some of the best varieties with Canada varieties that we shall get some good fruit from our own country.

The President: The Secretary will read the reports of the former Treasurer and Secretary.

REPORT OF THE TREASURER

American Pomological Society, in account current to August 26, 1897, with Chas. E. Richardson, Treasurer.

Dr.

To amount paid for stationery, printing and postage (viz.)		
Robinson Printing Co.	$6 50	
Crane & Co., reports	675 00	
Geo. C. Brackett, printing and postage	14 60	
J. L. Fairbanks & Co., books	4 60	
Geo. C. Brackett, printing and postage	33 75	
P. J. Berckmans, " " "	30 65	
C. E. Richardson, " " "	2 36	
		$767 46
To amount paid G. C. Brackett in settlement of account	$61 11	
" " " " " on acc't of office expenses	50 00	
" " " " " salary	100 00	
		211 11
" " " Henry Mitchell for medals		43 22
" " " C. E. Richardson, freight on reports	$3 14	
" " " " " expenses, reports	3 00	
" " " " " for chests for reports	16 25	
		22 39
Total amount paid to date		$1,044 18
Balance of cash in bank		282 48
		$1,326 66

Cr.

By cash received from Mr. B. G. Smith		$753 29
" interest on Chicago, Burlington & Quincy bond of $5,000	$500 00	
By interest on bank balance	3 37	
		503 37
" one copy proceedings sold		2 00
" membership account, 2 life (@ $20	$40 00	
" " " 7 biennial (@ $4	28 00	
		68 00
Total amount of receipts		$1,326 66

August 26, 1897.

CHAS. E. RICHARDSON, Treasurer.

ASSETS.

Bond of $5,000, Chicago, Burlington & Quincy R. R., valued at cost	$4,910 83
Cash in New England Trust Co., Boston	282 48
	$5,193 31

Liabilities none.

(Signed) CHAS. E. RICHARDSON, Treasurer.

Boston, Aug. 27, 1897.

I have examined the foregoing account and find it correct with proper vouchers.

(Signed) EDWARD B. WILDER, Auditor.

Upon motion duly seconded the report of the Treasurer was adopted.

REPORT OF THE SECRETARY AMERICAN POMOLOGICAL SOCIETY.

Secretary's Financial Accounting, Jan. 1, 1895, Sept. 1, 1897.

1895.			Dr.	Cr.
Aug. 11.	Total receipts from membership, etc., per statement rendered the President to date, and approved by him			$189 50
	Total Disbursements - Items:			
	To expressage	$20 56		
	" freights and drayage on repts.	4 44		
	" telegrams	5 68		
	" sundries, stationery, Secretary's travel. exp.	66 68		
	" postage, distributing Vol. '95 and correspondence	53 25		
	" salary of Secretary	100 00		
			$250 61	
Oct. 12.	Balance due and paid by Treasurer's draft			61 11
Aug. 28.	Receipts—Dft. from Treasurer			675 00
	Disbursed—Messrs. Crane & Co., Topeka, Kans.:			
	To pub. 700 copies vol. 1895		672 75	
	" printing 700 labels for mailing		1 25	
	" " 250 envelopes		1 00	
	To 1 year's P. O. drawer rental		2 00	
	By biennial fee—(M. M. Burtner, West Fairview, Pa.)			4 00
	To remittance same to Treasurer		4 00	
Dec. 23.	By biennial fee, G. C. Roeding, Fresno, Cal.			4 00
Dec. 27.	By draft from Treasurer			14 60
	To disbursement of same—items:			
	Postage and postal cards		10 35	
	G. W. Crane, Topeka, Kans., printing		3 00	
	Lawrence Journal Co., printing		1 25	
1896.				
Jan'y 1.	Receipts from Treasurer			75 00
1897.				
Jan'y 1.	Disbursed the above to:			
	Secretary's salary		25 00	
	Postage and stationery		45 15	

Sept. 1.	Total receipts since Jan. 1st.—Items:			
	Draft from Treasurer	$33 75		
	Draft from " (Secretary's salary)	25 00		
	Ck. G. L. Taber to complete life membership	16 00		
	P. O. M. O., G. H. Miller, biennial membership fee	4 00		$78 75
	Total disbursem'ts since Jan. 1. - Items:			
	Postage	$47 74		
	Expressage	30		
	Stationery	2 45		
	Telegrams	40		
	Col. on Ck. G. L. Taber, biennial fee	25		
	Secretary's salary	25 00		
			$76 14	
	Balance due Society Sept. 1, '97		9 46	
			$1,101 96	$1,101 96

Submitted Sept. 1, 1897.

(Signed) G. C. BRACKETT, Secretary.

Upon motion duly seconded the report of the Secretary was adopted.

Mr. Berckmans: I would like to bring before the Society a matter of importance. It is a matter of finance and it has given me a great deal of concern during the ten years that I have been President. When this body was first organized it was composed of men of wealth, but now that class have gone out of the Society. We are now practically an organization of fruit growers. The membership fee of this Society was fixed at $4 in the Constitution, but if we put this fee to $2 I believe we shall get more men and increase our revenue. We have today substantially 119 members, which gives us practically $476. The last session, which was held in California, was a very expensive one. This session here in Columbus will cost us less money. I believe that the Constitution should be amended so as to require members to pay but $2 instead of $4 as membership fee. I therefore move that clause 3 of the Constitution be so amended that it shall read: "They shall pay two dollars for each session."

Dr. Hexamer: I support that motion. I think if we have annual sessions that $2 will not be too much. It is well to consider whether an annual session would not be advisable.

The amendment was adopted by a unanimous vote.

Mr. Berckmans: We have an endowment from the bequest of Mr. Wilder. We have $5,000, but it was intended to perpetuate the life of the Society. The income from $4,000 of this we can use for miscellaneous expenses, and it draws four per cent. The income from the other $1,000 is for the purpose of awarding the Wilder medal for fruits exhibited before this Association. You cannot touch it for anything else. I want to impress upon you another thing. In the Report for 1887 you will find that the legislature of Massachusetts granted the charter under which you live and there are certain clauses in this charter which you must obey. If you go

astray in regard to these matters you will lose your charter. My successor has not been as familiar with this as I have been and this is for his guidance. The $5,000 you have, but do not touch it. Do not diminish it, but keep it sacred. It was given for a certain purpose and should not be used for anything else.

Prof. Taft: Something was said about holding annual sessions. I am very much in favor of them and I want to make a motion, if it is in order, to amend the Constitution so as to provide for annual sessions.

Mr. Berckmans: I think we can change to annual sessions without amending the Constitution. If you find in any year that you lack funds, you can hold over until you have sufficient funds to hold the session. The whole matter should be referred to the Executive Committee with power to act.

Prof. Alwood: I would like to have the Society meet annually, but I think it should be referred to the Executive Committee. I am in favor of annual sessions, if we can have them, after the matter is looked into.

Upon motion, duly seconded, the question of holding annual sessions was referred to the Executive Committee with power to act.

An informal vote upon the question showed that more than three-fourths of the members present favored holding annual sessions.

REPORT OF COMMITTEE ON AWARD OF WILDER MEDAL.

Dr. Hexamer, Chairman of Committee:

To the President and Members of the A. P. S.:

Your Committee on Fruits Exhibited, and on the awards of the Wilder Medal, recommend the award of a

SILVER MEDAL

To Geo. W. Campbell, Delaware, Ohio, for Campbell Early Grape. Bunch medium to large, shouldered; tapering, fairly compact. Berry of medium size, seven-eighths inches; color blue black; juice sweet; pulp melting; seeds small; with slight astringency; very pure in flavor, and in all respects promising to become a most valuable grape for market as well as home use.

H. G. McPike, Alton, Ills., for McPike Grape. Bunch large, shouldered, sometimes, occasionally not, compact; tapering; berry large, round; one inch in diameter; color black or nearly so; skin thin; very juicy, watery; pulp melting, but not high flavored; seeds large, two to three in each berry; canes short jointed; wood red; leaves large, apparently healthy; season about the same as Worden.

To the collection of Russian Apples grown at the Central Experimental Farm, Ottawa, Canada. Exhibited by the Horticulturist, John Craig; designed to show that this class of apples may be grouped into families more or less well defined. These apples are unusually clean and well colored, but are nearly all summer varieties, even when grown in northern latitude, 45½ degrees.

OTHER FRUITS EXHIBITED.

N. H. Albaugh, Tadmor, Ohio, exhibits the Diamond Peach. This is a fair-sized, yellow-fleshed, cling stone peach of medium quality, ripening with or a little later than Elberta.

M. J. Graham, Adel, Iowa. Hunt Plum. Fruit of the Wild Goose type; size one and three-eighths by one and one-eighth inches, roundish oval, scarlet in color, overlaid with light lilac bloom; skin thin; flesh melting; adherent to the stone, very sweet, attractive; a promising variety where there is a demand for plums of the *angustifolia* or Wild Goose type.

C. C. Stirling, Grand Rapids, N. Y. Plum, Sunrise, *Prunus Domestica*. A medium size, round, lilac and yellow colored plum of the gage type. It is firm fleshed, but its value will depend upon whether or not it fills a present want in the place where it is grown.

D. J. Millar, Saltello, Ohio, exhibits a large winter apple, of whose quality the judges are unable to judge at this season.

Respectfully submitted,

F. M. HEXAMER,
JOHN CRAIG,
H. E. VAN DEMAN,
J. VAN LINDLEY.

REPORT OF COMMITTEE ON RESOLUTIONS.

Prof. Stinson, chairman of committee:

Your Committee on Resolutions beg to offer the following:

Resolved, That we, the members of the American Pomological Society, express our sincere thanks to the officers and members of the Ohio State Horticultural Society, the officials of the State of Ohio and the city of Columbus, for their genial welcome and considerate attention to our members during this session, and to the Press of the city of Columbus for their generous notices of our proceedings.

Respectfully submitted,

JNO. T. STINSON,
H. C. IRISH,
WM. A. TAYLOR,
Committee.

INVITATIONS FOR NEXT MEETING.

President Watrous: Perhaps the matter of selecting the place for the next meeting of the Society should be considered at this time. An invitation from the Chamber of Commerce of Niagara Falls, New York, has been received. Will the Secretary please read that communication?

The Secretary then read the following invitation:

CHAMBER OF COMMERCE,
Niagara Falls, N. Y., July 26, '97.

Mr. G. C. Brackett, Secy., American Pomological Society, Lawrence, Kansas:

Dear Sir—The Chamber of Commerce extends to your Association a cordial invitation to hold its annual convention in this city.

We have only recently been in a position to offer proper accommodation in the way of a meeting place for large conventions, but we have now a suitable Convention Hall, which is offered to all conventions free of charge.

No locality in the world has been more favored by nature than Niagara Falls, and we believe every one attending your convention, if it is held in this city, will find more enjoyment during the time not occupied by the business session, than can be secured in any other place.

A number of conventions have met here the present year, and we have yet to hear of any delegates who have not been satisfied and who have not thoroughly enjoyed themselves. Three of the conventions which have been held here this year have decided to hold their next meeting here also.

We assure you we will do everything in our power to make your visit a pleasant one, if you decide to come to this city.

Yours very truly,

H. W. BEARDSLEY, Secretary.

Mr. Goodman stated that the Missouri Horticultural Society would present an invitation at the proper time for the Society to hold its meeting either in St. Louis or Kansas City.

Mr. Barnes, for the Kansas Horticultural Society, favored a meeting in Kansas City.

Dr. Hexamer called attention to the approaching seventieth anniversary of the Massachusetts Horticultural Society, which was organized in 1829, and suggested that decision as to place of meeting be deferred until a later date.

On motion, duly seconded, the matter was referred to the Executive Committee.

The meeting then adjourned until 8 P. M.

EVENING SESSION.

September 2, 1897.

Called to order by Pres. Watrous at 8 P. M.

Pres. Watrous: Gentlemen—This evening is to be devoted to general discussion. It has been suggested that we take up at this time the question of the future outlook of the Society, or, in other words, How shall we promote the interests of the American Pomological Society?

Prof. Lazenby: I am interested in this Association, although I am one of the younger members of it. I feel like saying that I have no fear whatever of the American Pomological Society becoming like the church of a friend of mine in Chicago. I was talking with him and he seemed to be ready to be discouraged over the outlook of his church, and I said to him, "Doctor, your church certainly has a grand future before it and I am sure it has had a glorious record in the past." "Yes," he said, "the grand future of my church is its glorious past." I do not want the grand future of this Society to be its glorious past. Can we not suggest something that will make this Society better?

Prof. Taft: I have heard several subjects mentioned in this connection within the last hour or two. The last subject that I heard discussed was in regard to annual sessions. From what I have seen of the meetings for the last six or seven years I think it would be well to hold a meeting next year. I believe the officers can call a meeting at any time. I think that

the lack of sufficient notice is the cause of the attendance at this meeting being so small. Of course, when we met at San Francisco, the great distance caused a small meeting, while at Chicago, we were overshadowed by the World's Fair. I think we should have a meeting next year and the notices should be sent out in good time. This will insure a large attendance, and a good meeting. The cost of this meeting need not be very great, practically the only cost being the printing and sending out of the notices, and the slight expense of the session.

Prof. Taft: What is the cost of a report of the proceedings?

The Secretary: I find from the Financial Report of your former Secretary that the cost of seven hundred copies of the Proceedings of 1895 was $672.50.

Prof. Alwood: I think that is too much. We publish a great deal of matter at our Experiment Station and we do not pay any such price as that.

Prof. Troop: I will say that we printed one thousand copies in cloth last year, each being two hundred and fifty pages, for $600.

Mr. Farnsworth: We published our report (Ohio State Horticultural Society) last year for $165.

Mr. Harrison: We believe it can be done at Akron cheaper than it can be done in New York City. Cleveland gets work done in Akron that cannot be done as cheaply in New York.

Prof. Alwood: I suppose I am the youngest member of the Society in the matter of attendance. This is the first meeting I ever attended, although I have belonged for ten years. I want to say that the best thing this Society can do to attract the young men is to let them know that this Society is alive. I do not want to criticise anybody, but the proper notices have not been given to our meetings. We must get the matter before the public, concerning the time and place of our meetings. We should have annual meetings. I am heartily in favor of that. I want to say that it would be a shame to let this Society die. I belong to other societies, but I always look to this Society as being the acme of all other societies. It has stood the test of time and given dignity to American horticulture. We must not think of letting it die. I am almost astounded to come here and see only a corporal's guard, but it may be accounted for by lack of sufficient notice. It would be a calamity to let this Society go down; we must not think of such a thing. I hope that we shall go forward and that every one will take hold and push the work along.

Mr. Barnes: I am of the opinion that it has not been properly advertised. I presume in our state you can count on the fingers of both hands all the people who knew of this meeting of the Society. It is not well advertised and there is not enough stir about it. We do not want to meet at the time of a State fair because it detracts from our work. There are a great many people here and I supposed this room would be full, but we are overshadowed by too many things going on. I have advised in our State against holding horticultural meetings on Saturday, because they are interfered with by a good many things. We do not want to meet where there is a centennial or a World's Fair, but we want to have a meeting that will draw people for its own intrinsic value. I am satisfied that if the State Fair was not going on, this building would not hold them. I do not want to say anything against a State fair, but we do not want our meetings in connection with anything that will overshadow us.

Mr. Manning: Some of the old leaders are gone. Barry was a power and Downing was a power. I want to say that I am still true to the Society and that I have attended every meeting for thirty-seven years.

Mr. Kingsbury: I am not a member of this Society, but I am a member of the Horticultural Society of Indiana. I think one reason for a flagging interest in the work of horticultural societies lies in the fact that men cannot make money in fruit culture as they used to do. There were better prices then and men were more eager to learn to produce the best crops. Now where grapes are sold for one cent a pound and strawberries cannot be sold in Indianapolis for more than five cents a quart, the people get discouraged and think of turning their attention to some other business. This is, I think, the reason why our societies are so slimly attended. In reference to holding meetings with State fairs, the railroads give a rate of one cent a mile, and it is a good time to go. It is a question whether this Society could get reduced transportation rates, at least they could not get the roads in our State to do it. This Society should put in a protest against the treatment they have received from the railroads. They will not grant us any rates unless we can guarantee a hundred persons. I know that the fair week is not a good time to hold our meetings, but at any other time we could not get the rates.

Prof. Irish: I feel as Mr. Alwood said a few moments ago. I am a young member of the Society and never attended it before. One thought has impressed me strongly and that is that the members who are to be on the program should be assigned their subjects far in advance of what they were this time, from the fact that if anyone is to work out a line of experiments it takes a long time. If a member was assigned his subject a year in advance he would be able to give us something very profitable to us. We might then have a number of such papers as we had from Dr. Kedzie. It would also tend to increase our attendance and people would recommend our Society to their friends.

Mr. Manning: In 1872, in Boston, we had the greatest meeting I ever saw. A delegation came over from Nebraska with two car loads of fruit. They were also there from Kansas and Canada. There was a great discussion and many valuable things were said. We had a great banquet at that meeting, and I think it was the greatest meeting we ever had. Wilder's dying protest was that we should not take the meetings from the East or it would die down. One member says fruit growing is unprofitable, but I think it can still be made to pay.

Prof. Van Deman: There are some reasons for the poor attendance here which I think all of us understand without saying anything further. In regard to holding our Society meetings with the State fair, I want to say that it has always been a failure. The larger attraction is at the fair. At New Orleans we had a delightful time and a successful meeting in connection with the exposition. We would have a successful meeting with any exposition, where the attendance is not like the State fair. For instance, if we came to Ohio next year we could have a good meeting. The very finest talent that could be obtained should be invited and urged to go to this meeting, and we should especially urge that every person who is on the program should be present. There is a difference between a paper to be read by the Secretary and one to be read by the writer himself. Another advantage would be to have more in the way of an exhibit than we have had here. Exhibits are a great attraction in all parts of the country and

the people expect a fruit exhibit at the meeting of this Society. By working it up ahead there would be a large exhibit and that would bring the people and an increase of membership would result. We would have very valuable discussions and this would increase the interest and engage the attention of our people.

Prof. Alwood: I think the suggestion is a good one. Give us more time. I am ashamed of my paper, as I had but little time to put on it.

Prof. Van Deman: I do not think the subjects should be assigned, but I would give each speaker the utmost freedom within certain lines of work and experiments.

Prof. Lazenby: Of course we have a large number of horticultural organizations in this country. We are busy men and unfortunately a large proportion of us are not wealthy men. We like to attend some of these societies. We naturally go to those in which our interest is more largely centered. It frequently happens that societies have their meetings in different parts of the country at the same time. If we could have the different societies meet at the same place at about the same time it would be better. The nurserymen, florists and pomologists are all interested along the same line. We might model our plan of meetings after the plan of the American Association for the Advancement of Science. There are a number of these societies and they all meet at the same time and place and they get good results. I would like to attend the meeting of each of the National horticultural societies but it is clearly impossible.

Prof. Van Deman: Prof. T. V. Munson prepared a scheme of this kind but for some reason it did not meet with approval.

Mr. Barnes: In regard to this last matter I will say that it is only a few years since the florists and nurserymen divided up. I am surprised that our friends say there is no money in horticulture. I live in a State where we have short grass and the shorter the grass the more we get together to find out what will make it longer. I do not understand that our purpose is to find out how to raise more stuff. I tell you we raise too many culls. If we raise sixty per cent of first class fruit and only forty per cent of culls we are all right. I want to say there is not a State that is doing as well as she might do. It is just as I tell them in Kansas that there are lots of things they can grow there, if they will. I do not want to hear any person say there is no money in horticulture. There is no trouble in selling strawberries, if you have good ones. It is the man who takes poor berries to market who complains of the business. We must educate the people to demand good fruit and the skilled horticulturist will make money. We have a glorious meeting at the State capital in Kansas, and we have good county meetings. The Missouri Valley Society would fill this room at their meetings and they meet every month; they know how to raise fruit, too. I wish I had brought some samples with me to show you what we can do. If we had eyes like a magnifying glass, what might we see? Look at the last fifty years and see what it has done for us, we do not have to live in the past. We can fill our ranks with good men and I want to say we should look forward and not backward.

Mr. Kingsbury: In reference to selling fruit in market, I thought I made myself clear when I said I never raised better pears and I never got less money for them; of course people had no money to buy anything. I had a friend who sold 284 baskets of peaches last fall at seventeen cents a basket. Now at those prices it cannot be expected that young men will

rush into this business, attend the meetings, pay their railroad fare and hotel bills unless they can derive some profit from it. Being a reporter myself for years I have a suggestion to make. If you will take the pains to interest the reporters, treat them to some of the nice varieties of your fruit sent here to be enjoyed, it will help your cause. Treat these gentlemen well and you will get better reports of these meetings. They will not only make good reports but will send it out to other papers.

Mr. Goodman: I think the success of the meeting depends wholly on the Secretary and President and when they determine to work to together, we shall have good meetings. If they see to it that we have first class papers then everyone who goes can learn something and they will go. I have heard some valuable papers at this meeting and trust that we shall have more of them. I feel confident that we shall have plenty of delegates at our next meeting if the proper arrangements are made. We are building up right along and getting better results every year. I will say that if every member will carry the enthusiasm of this meeting tonight home with him and impart it to his neighbor, it will help us. I believe our officers will do everything in their power, but we must help them, and let everybody know that this is a Society where they may gain something by their attendance. Do all you can to add new members to our rolls. Do not go away feeling that we have good live men at the head of this Society, and think that is all that is necessary. Every man should consider himself a committee of one to stir up interest in this Society. I believe if we all make a proper effort this Society can be brought up to what it should be. The work is along new lines now but it is just as interesting as the old work. We must all work together and we may reach the time when men will not only go themselves but urge others to go to the meetings. We are all interested in this work and we must make it a success.

Mr. Van Lindley: We have had a good nurseryman's association for twenty years and we all go to the meetings and we learn something every time we go. There is generally a better exhibit of fruit there than there is here today. We must see that this exhibit is increased in future. This Society generally gives us the cold shoulder to some extent, and treats us in such manner that some of us take offense and never come back again. I cannot complain for myself, but I have heard some such talk and I think this Society should pay more attention to that class of men. I offer these suggestions to you and you can do with them what you please.

RESOLUTIONS REPORTED BY COMMITTEE ON NOMINATIONS.

Dr. Hexamer—

To the Members of the American Pomological Society:

Your Committee on Nomination of Officers for the ensuing term desire to offer the following resolutions:

Resolved, That we express our sincere regret that President Prosper J. Berckmans has positively declined to permit us to consider his name for re-election to the office of President.

Resolved, That we avail ourselves of this opportunity to testify our high regard for the great services he has rendered the American Pomological Society as its President for the past ten years and to further express our warm affection for him personally as a noble, high minded gentleman who has most ably contributed to the development and elevation of American Pomology.

Respectfully submitted,

F. M. HEXAMER, Chairman,
WM. B. ALWOOD, Secretary,
G. B. BRACKETT,
GEO. W. CAMPBELL,
WM. A. TAYLOR,

Sub-committee of Committee on Nominations.

Upon motion duly seconded the report of the committee was adopted by a rising vote.

The Secretary then read the following paper:

HANDLING AND MARKETING FRUITS.

BY P. M. KIELY, ST. LOUIS, MO.

This subject has been handled so often heretofore by practical men and good writers that I do not pretend to offer anything new, and I shall only aim to emphasize some of the best suggestions that are known to most fruit growers. No one will deny that handling or marketing constitute the most important features of the labor connected with the industry. Mistakes in the picking, packing and marketing may lead to the loss of the crop and all the labor bestowed on its production.

The hot contest for existence now in any line of business calls for the best efforts of those who wish to excel or make a good living. The further a man is from market the greater the need of being an expert in picking and packing fruits for distant markets. The wants of the local markets are understood by all and it is unnecessary to dwell here; but commercial fruit growing, as a rule, means shipping to distant markets, so their wants must be known and satisfied.

The model packers are the Californians. Necessity was the mother of invention in their case, and their methods in picking and packing and marketing are the best examples before us. Situated as they are, from 2,000 to 3,000 miles from their principal markets they are forced to study deeply every

feature essential to success. As shippers they have to compete with every fruit growing State in the Union, for they go into all the big markets and secure patronage on the merits of their products.

The producers of the East and of the Mississippi Valley may claim they lack the climate of the Golden State which produces such handsome fruits. In the matter of freight charges, however, they are so favored that one advantage offsets the other.

The intelligent, progressive and enterprising fruit grower who properly improves the opportunities existing can, in a dozen States that might be named, raise as handsome fruit as California producers. In looking over the situation the past ten years we can recall peaches offered here from Georgia, Texas, and Missouri that were as handsome and attractive as the best that ever came here from California. These were, of course, exceptions, but they are in evidence as to what can be done in States so far apart.

Admitting that the trees or orchards have received that care they are entitled to and necessary to produce choice fruit, the picking of same calls for the exercise of the greatest care and precaution. The slightest bruise, which is hardly visible when leaving the shipper's hands, shows up at destination an ugly blotch, a discolored spot in which decay has sometimes set in. The sale of the package is already seriously damaged. If the packages are roughly or hurriedly handled, as is often the case, the situation becomes much worse. If a shipper had the time and means to spare to visit his market while his fruit was coming in he would realize the force of these remarks and often acquire some valuable pointers.

There is a needed tendency towards smaller and neater packages for fruits. In addition to getting nearer the wants of the consumer the fruits are not subject to the injury they are exposed to in large packages, where the ripe are crushed by the greener ones. A light, attractive package helps to no small extent in the sale of the contents. The cost of packages is no longer a big expense. The decline has kept pace with the decline in values of fruit, and new and improved machinery insures still lower prices for many of the packages necessary.

Conceding that the grower has done his duty so far in raising, picking and packing the fruit, the next step is the best market, and last but not least, the firm selected to ship to. The alluring and neatly worded circulars have lead many a shipper astray. Big figures too often prove a bait that many cannot resist. Every big market has plenty of firms who are entirely satisfied with their legitimate commissions to whom the grower can ship without assuming any risk. Beware of the big windy circulars that promise everything and the firms that send them out.

Mr. Manning: I believe the practice of shipping in barrels to England is wearing out. I think the practice of shipping in boxes is better. The people buy this kind of package better. Small and neat packages attract the attention of market buyers and the fruit grower gets better prices for his goods.

Prof. Craig: In this matter of shipping I would like to call attention to our work in this matter. I am shipping fruits that are truly perishable in cold storage; our shipment includes peaches, pears, plums, early apples and tomatoes. They are sent in refrigerator cars and put on steamers which have a plan of cold storage. They will be sent to London, England. The principal thing to be looked after is that we use fruit of the highest quality. Our fruit growers think the success of these shipments depends

on making the packages small. We use a crate with eight small boxes on the inside. We hope to put up packages that will be attractive and easily carried. While we have not much of a crop of fruit in Canada, yet our government was willing to make the experiment and subsidize a line of steamers for this purpose. We have guaranteed a carload of fruit each week as long as it lasts.

Mr. Lindley: I have shipped peaches to England from North Carolina. In 1895, I shipped peaches to Mr. O'Brien, the superintendent of the Union Express companies. He ordered a crate of peaches sent to London. We put them up in the ordinary way and they went across. Mr. O'Brien received them in the ordinary way and he used them on his way back on the steamer. They were not in cold storage at all. They were packed just as I pack all peaches, three baskets in a crate.

Prof. Craig: Were they shipped in the ordinary way or by cold storage?

Mr. Lindley: I do not think there was any cold storage at all. The fruit was in good sound condition when shipped.

Prof. Craig: I have seen peaches from California in Montreal. They kept because they had no juice in them. I believe we could ship many fruits if we had good air chambers on the ship, but the ship is generally closed up during passage and the fruit spoils.

Mr. Goodman: We ship peaches and our plan is to use egg cases. We wrap each peach in tissue paper and pack the same as eggs; we ship in these cases and they arrive safely; very little of this fruit spoils for us and it is sold on the market at good prices. I will say that we have tried cold storage for the last ten years with good results. It is well to remember, however, that a temperature that will keep apples will not keep peaches.

Prof. Van Deman: I have seen grapes at Chicago that were raised in Australia. They did not keep long after being exhibited, but fruit can be shipped long distances if care is taken in preparing it.

In the absence of the author the Secretary read the following paper:

THE POLLINATION OF PLUMS.

BY PROF. F. A. WAUGH, BURLINGTON, VERMONT.

The plum has never achieved the position in American Pomology to which its merits entitle it. This is partly because of a very general ignorance regarding the multitudinous cultivated varieties and their local adaptations, and partly because of a similar ignorance concerning methods of culture. The revival of interest caused by the introduction of the Japanese plums, and the increasing attention given the native varieties are removing the former difficulty; but the successful cultivation of the plum is still a difficult problem even with many fruit growers who have made money with apples, peaches or pears. One of the puzzling cultural problems, and one which has not always been sufficiently considered, is that of cross-pollination. Waite* has shown that many varieties of pears are almost or totally unfruitful when grown by themselves; several investigators have found considerable self-sterility among apples; and Beach† and Green‡ have found

*M. B. Waite, The Pollination of Pear Flowers, Bull. 5, Div. Veg. Path., U. S. Dep. Agr.
†S. A. Beach, Notes on Self-Pollination of the Grape, N. Y. State Sta. Rpt., 1892, p. 597. Impotency of Grape Pollen, Garden and Forest, 1893, p. 199.
‡S. B. Green, Cross-Fertilization of Grapes, Minn. Exp. Sta. Bull. 32, p. 229.

that many varieties of grapes require cross-pollination. For several years it has been known that plums, especially native varieties, are more or less self-sterile, but the extent of self-sterility and the mutual affinities of varieties for cross-pollination have been only a matter of conjecture. Some discussion on this subject with a report of experiments was presented by the writer in an experiment station bulletin* a year ago; and more extensive experiments made this year in the famous plum orchards of Mr. J. W. Kerr, at Denton, Md., are reported in a more recent station publication.† These experiments form the basis of the present paper.

In the first place it seems desirable to know how general is this quality of self-sterility,—this need of cross-pollination. To determine this, blossoms were covered before opening, with paper sacks and the sacks left on till the fruit was all set on the tree. This treatment prevented cross-pollination, but did not interfere with self-pollination, especially as several blossoms were always included in each sack. The experiments of 1896 were made in the orchard of Mr. L. M. Macomber at North Ferrisburgh, Vt. Out of 1,890 blossoms covered only 52 fruits set, and many of these were so poor and weak as never to reach maturity. Robinson was the only variety which seemed to be really self-fertile. The complete figures are given below:

RECORD OF PROTECTED BLOSSOMS, 1896.

Variety.	Approximate number of covered blossoms.	Fruits set.	Crop set on remainder of tree.
De Soto	25	0	Moderate.
"De Soto, Wrong"	75	0	Moderate.
"Original Minnesota"	100	0	Moderate.
"Minnesota"	100	10	Moderate.
"Minnesota" Seedling No. 2	250	6*	Full.
"Minnesota" Seedling No. 3	80	4*	Full.
Pottawattamie	200	0	Light.
Robinson	60	8	Moderate.
Rollingstone	200	0	Full.
Wolf	200	9	Moderate.
Wolf Seedling No. 5	75	5*	Full.
Wolf Seedling No. 6	300	0	Full.
Wolf Seedling No. 7	125	6*	Moderate.
Wolf Seedling No. 2	100	4*	Full.
Totals	1,890	52	

* Weak.

Much more extensive experiments in 1897 gave more positive results. Out of 6,428 blossoms covered only 5 set fruit These results were carefully verified by Mr. Kerr and myself, and do not contain the smallest element of uncertainty. The tabulated results presented in full herewith are very interesting:

*F. A. Waugh, The Pollination of Plums, Bull. Vt. Exp. Sta., 53, Aug., 1896.
†F. A. Waugh, Problems in Plum Pollination, Rpt. Vt. Exp. Sta., 10, p. 97, July, 1897.

RECORD OF PROTECTED BLOSSOMS—DENTON, MD., 1897.

Varieties.	Blossoms covered.	Fruits set.	Crop set by unprotected blossoms.
Japanese group:			
Chabot	57	0	Good.
Chabot	102	0	Good.
Kerr	92	0	Scant.
Maru	166	0	Heavy.
Maru	61	0	Heavy.
Totals	478	0	
Americana group:			
Apricot	60	0	Very few.
Champion	28	0	Moderate.
Cottrell	56	0	None.
Forest Garden	44	0	Good.
Gaylord	162	0	Heavy.
Hammer	149	0	Light.
Hawkeye	32	0	Good.
Heaton	123	0	Heavy.
Kieth	73	0	Heavy.
LeDuc	87	0	None.
LeDuc	53	0	Good.
Leonard	103	0	Moderate.
Old Gold	88	?	?
Rockford	63	0	Heavy.
Rockford	41	0	Good.
Rocky Mountain Dwarf	*200	1	Heavy.
Rollingstone	27	0	Light.
Rollingstone	32	0	Light.
Van Buren	46	0	Heavy.
Van Deman	105	0	Good.
Wildrose	137	0	None.
Totals	1,709	1	
Nigra group:			
Cheney	88	0	Good.
Itasca	*100	0	None.
Totals	188	0	
Miner group:			
Idall	102	0	Moderate.
Indiana Red	25	0	Moderate.
Miner	194	1	Moderate.
Miner	35	0	Moderate.
Miner	33	0	Good.
Prairie Flower	73	0	Moderate.
Totals	462	1	
Wayland group:			
Garfield	143	0	Heavy.
Kanawha	68	0	None.
Leptune	50	0	Good.
Missouri Apricot	132	0	Heavy.
Wayland	103	1	Heavy.
Wayland	154	0	Heavy.
Wayland	134	0	Heavy.
Worldbeater	36	0	Light.
Worldbeater	36	0	Light.
Totals	856	1	

* Estimated.

RECORD OF PROTECTED BLOSSOMS—*Concluded.*

Varieties.	Blossoms covered.	Fruits set.	Crop set by unprotected blossoms.
Wildgoose group:			
Charles Downing	24	0	Moderate.
Charles Downing	42	0	Moderate.
Dunlap No. 2	72	0	Good.
Freeman Favorite	20	0	Moderate.
James Vick	111	0	Moderate.
Ohio Prolific	133	0	Heavy.
Osage	142	0	Moderate.
Schley	45	0	Scant.
Smiley	203	0	Light.
Sophie	126	0	Light.
Sophie	49	0	Light.
Texas Belle	42	0	Heavy.
Wildgoose	155	0	Heavy.
Wildgoose	142	0	Heavy.
Totals	1,316	0	
Chickasaw group:			
African	102	0	Good.
Arkansas Lombard	168	0	Good.
Coletta	78	0	Moderate.
Early Red	77	0	Good.
Early Red	73	0	Good.
El Paso	76	0	Scant.
Munson	103	0	Good.
Munson	58	0	Moderate.
Munson	69	0	Light.
Newman	232	0	Good.
Ogeechee	41	0	Light.
Ogeechee	103	0	Light.
Piram	52	0	Scant.
Pottawattamie	74	0	Heavy.
Robinson	63	2	Good.
Totals	1,419	2	
Miscellaneous:			
Hattie	42	0	Scant.
Hattie	47	0	Scant.
P. maritima	*300	0	Heavy.
Imp. Dwf. Rocky Mountain Chy (*P. besseyi*)	*200	1	Heavy.

* Estimated.

It will be seen that Robinson once more is the only variety to show an indication of self-fertility. The conclusions which we have reached in these experiments are:

1. For all practical purposes all classes and all varieties of native plums may be regarded as fully self-sterile. Exceptional varieties may be self-fertile, but they are rare. It is possible also that in other seasons or other localities self-sterility would not be so marked as this year at Denton.

2. The Japanese plums are sometimes quite self-sterile. Satsuma appears to be always so, and cross-pollination is doubtless beneficial to nearly all varieties.

The next question which naturally arises is as to what varieties can be depended on to cross-pollenize each other. And the most obvious answer is that those varieties which blossom at the same time must be chosen; for at least no two varieties can pollenize each other unless they are both in blossom at once. Now the study of the blossoming seasons of plums is not an entirely simple one. There are a number of facts to be considered.

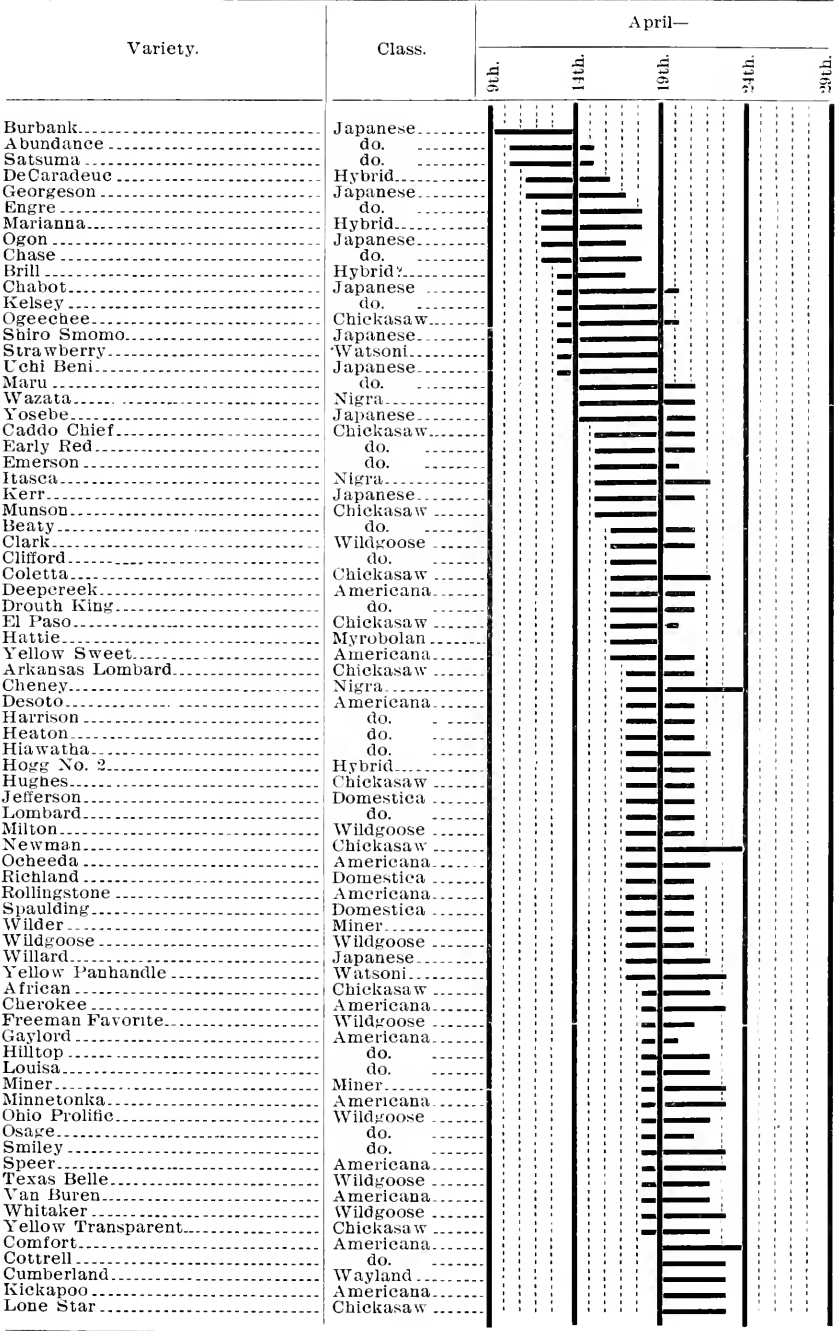
Commencing with a plum blossoming season of four to five weeks in the Gulf States the season shortens as it passes northward. In the latitude of Washington the season extends over three to four weeks, while at Burlington, Vt., the season is reduced to one to two weeks. The following comparison of blossoming periods for well known varieties at Denison, Tex., and at Ottawa, Ont., is arranged from notes kindly furnished by Messrs. T. V. Munson and John Craig. It will enable the reader to see at a glance the extremes of the blossoming seasons:

COMPARISON OF BLOSSOMING PERIODS.

Varieties.	1896.		1897.	
	Texas.	Ontario.	Texas.	Ontario.
DeCaradeuc	Mar. 20	May 5	Mar. 7	May 12
Burbank	" 18	" 9	" 8	" 15
Abundance	" 20	Apr. 28	" 9	" 10
Marianna	" 20	May 10	" 9	" 9
Wildgoose	" 26	" 30	" 17	" 18
Chas. Downing		" 22	" 20	June 1
Milton	Mar. 26	" 13	" 21	May 28
Miner	Apr. 1	" 12	" 22	" 20

We have given careful attention in our work to the problem of blossoming seasons. Records for three years from Mr. Kerr's large orchards and a great mass of valuable blossoming notes from other orchards all over North America were available. Taking the notes from Mr. Kerr's orchards as the basis—they being the most complete—and averaging them and correcting by comparisons with other notes at hand I have arranged a chart of relative blossoming seasons for the latitude of Denton, Md., which gives about an average of the blossoming seasons for the United States and Canada. One can readily see by reference to this chart, a proof of which is here given, whether two varieties bloom nearly enough at the same time to make it safe to plant them together. There are, of course, variations in different localities and in different seasons; but if interpreted with proper judgment the chart will, it is hoped, be safe and useful.

RELATIVE BLOSSOMING SEASONS OF PLUMS AT DENTON, MD.



Variety.	Class.
Burbank	Japanese
Abundance	do.
Satsuma	do.
DeCaradeuc	Hybrid
Georgeson	Japanese
Engre	do.
Marianna	Hybrid
Ogon	Japanese
Chase	do.
Brill	Hybrid
Chabot	Japanese
Kelsey	do.
Ogeechee	Chickasaw
Shiro Smomo	Japanese
Strawberry	Watsoni
Uchi Beni	Japanese
Maru	do.
Wazata	Nigra
Yosebe	Japanese
Caddo Chief	Chickasaw
Early Red	do.
Emerson	do.
Itasca	Nigra
Kerr	Japanese
Munson	Chickasaw
Beaty	do.
Clark	Wildgoose
Clifford	do.
Coletta	Chickasaw
Deepereek	Americana
Drouth King	do.
El Paso	Chickasaw
Hattie	Myrobolan
Yellow Sweet	Americana
Arkansas Lombard	Chickasaw
Cheney	Nigra
Desoto	Americana
Harrison	do.
Heaton	do.
Hiawatha	do.
Hogg No. 2	Hybrid
Hughes	Chickasaw
Jefferson	Domestica
Lombard	do.
Milton	Wildgoose
Newman	Chickasaw
Ocheeda	Americana
Richland	Domestica
Rollingstone	Americana
Spaulding	Domestica
Wilder	Miner
Wildgoose	Wildgoose
Willard	Japanese
Yellow Panhandle	Watsoni
African	Chickasaw
Cherokee	Americana
Freeman Favorite	Wildgoose
Gaylord	Americana
Hilltop	do.
Louisa	do.
Miner	Miner
Minnetonka	Americana
Ohio Prolific	Wildgoose
Osage	do.
Smiley	do.
Speer	Americana
Texas Belle	Wildgoose
Van Buren	Americana
Whitaker	Wildgoose
Yellow Transparent	Chickasaw
Comfort	Americana
Cottrell	do.
Cumberland	Wayland
Kickapoo	Americana
Lone Star	Chickasaw

RELATIVE BLOSSOMING SEASONS OF PLUMS AT DENTON, MD.—*Continued.*

Variety.	Class.	April— 9th.	14th.	19th.	24th.	29th.
Lord Seedling	Americana					
Rockford	do.					
Roulette	Wildgoose					
Schley	do.					
Champion	Americana					
Chas. Downing	Wildgoose					
Clara	Americana?					
Cluck	Chickasaw					
Crescent City	Miner					
Columbia	Wayland					
Dr. Tyler Sugar Drop	Domestica					
Gordon	Americana					
Hammer	do.					
Hawkeye	do.					
Idall	Miner					
Indian Chief	Wildgoose					
Indiana Red	Miner					
Jewell	Wildgoose					
Kampeska	Americana					
Kopp	do.					
LeDuc	do.					
Maquoketa	Miner					
Muney	Americana					
Nelly	do.					
North Carolina	do.					
No. 0 (Kerr)	do.					
No. 6 (Kerr)	do.					
No. 20 (Kerr)	do.					
Old Gold	do.					
Parsons	Miner					
Pottawattamie	Chickasaw					
Prairie Flower	Miner					
Purple Yosemite	Americana					
Sophie	Wildgoose					
Sucker State	Wayland					
Weaver	Americana					
Wooten	Wildgoose					
California	Americana					
Coe Golden Drop	Domestica					
Colorado Queen	Americana					
Dakota	do.					
Forest Rose	Miner					
German Prune	Domestica					
Hanson	Americana					
Honey	do.					
Iris	Miner					
Jones Late	Americana					
Knudson Peach	do.					
Macedonia	Wildgoose					
Mankato	Americana					
Maryland	Hybrid					
Missouri Apricot	Wayland					
Moore Arctic	Domestica					
Moreman	Wayland					
Noyes	Miner					
Piram	Chickasaw					
Poole Pride	Wildgoose					
Reine Claude	Domestica					
Gen. Hand	do.					
Shropshire Damson	do.					
Stoddard	Americana					
Surprise	do.					
Williams	Nigra					
Williams No. 17	Americana					
Wolf	do.					
Forest Garden	do.					
Red Panhandle	Watsoni					
Smith	Americana					
Utah Hybrid	Hybrid					
Wayland	Wayland					
Worldbeater	do.					
Wyant	Americana					
American Eagle	do.					
Garfield	Wayland					
Illinois Ironclad	Americana					

RELATIVE BLOSSOMING SEASONS OF PLUMS AT DENTON, MD.—*Concluded.*

Variety.	Class.	April— 9th.	14th.	19th.	24th.	29th.
Irene	Americana					
Kanawha	Wayland					
Leptune	do					
Marion	Americana					
Blackhawk	do.					
Rachel	Miner					
Reed	Wayland					
Choptank	Wildgoose					
Esther	Miner					
Galena	Americana					
Golden Beauty	Wayland					
Heideman 88	Americana					
Heideman Black	do.					
Heideman Red	do.					
Heideman Yellow	do.					
Newton Egg	do.					
Pendent	do.					
Reche	do.					
William No. 0	do.					
Winnebago	do.					
Wood	do.					
Prunus maritima	*Maritima*					
Holt	Americana					
Joe Hooker	do.					
Pfeffer Premium	do.					
Smith Red	do.					

It is still possible when two varieties blossom at the same time and are planted closely enough together, that they will fail to pollenize each other on account of some lack of affinity between the pollen of one and the ovules of the other. Such idiosyncrasies of affinity in pollination are generally assumed to exist, and have been talked about a great deal of late. It would be too much at this time to assert that there are no such affinities; but our investigations thus far all tend to minimize their importance. It seems that most of the common native varieties are reliably interfertile without regard to the species from which they are derived or to other considerations. And, although it may be very unsafe to say that our American plums are cross-fertile with Japanese and Domestica varieties, still we know that authentic hybrids have been secured, showing that they are not absolutely cross-sterile.

In our present state of knowledge on this subject we can confidently recommend mixed planting of varieties of plums in adjacent rows; and, at least among the natives, can regulate the selection of varieties chiefly by the blossoming seasons. The Japanese plums should also be planted in mixture. But most of the Japanese varieties blossom together, very early in the season, and may be mixed with each other without such close attention to blossoming periods. In regard to the Domesticas, our knowledge is still very limited; but they appear to be more generally self-fertile than the Japanese or native plums.

F. A. WAUGH.

University of Vermont, August 20, 1897.

DISCUSSION.

Mr. Goodman: Does the paper state whether the blossoms were hand pollinated or simply bagged before opening and left to themselves?

The Secretary: The paper states that the blossoms were bagged before opening. I do not find it stated that they were hand pollinated.

Mr. Goodman: Then the experiment does not prove that the varieties mentioned are self-sterile. The exclusion of insects from the flowers would prevent the transfer of pollen.

Mr. Harrison: The conditions existing within the bags may have been very different from those in the outside air. I do not consider the experiment conclusive.

ADJOURNMENT.

On motion the Society adjourned to meet at such time and place as should be decided on by the Executive Committee.

MISCELLANEOUS PAPERS.

Prepared for the Columbus meeting and ordered printed by the Executive Committee.

LEMON CULTURE.

BY FRANK A. KIMBALL, NATIONAL CITY, CALIFORNIA.

It is quite probable that the lemon tree had its origin in the northwestern part of India. Neither Ancient Rome nor Greece knew of its existence, nor yet did any of the Mediterranean countries, till more than twelve centuries of the present era had passed away, and then the Arabs were the medium of introduction.

Nor was the comparatively short distance to England traversed by this, today, almost indispensable fruit during the next two hundred years, but instead thereof, she received her first lemons from the Azores, and from those islands, during a long period, her market was exclusively supplied.

At the present time, all of the countries bordering on or adjacent to, the Mediterranean sea, produce the lemon in greater or less abundance, as also does Australia, New Zealand and many of the islands of the South Pacific Ocean.

It is only during recent years that lemon culture has been prosecuted to any considerable extent in the United States. The Southern Atlantic States, and those bordering on the Gulf of Mexico, mark its first introduction.

In California there were but few bearing lemon trees until about 1890. It was on the 14th day of January, 1869, that I bought (at $2.50 per tree)—and immediately planted—my first lemon and orange trees; and later in the same year, extended my planting with trees bought in Los Angeles county. And right here is where I learned my first valuable lesson in lemon culture; the last mentioned trees were produced from lemon cuttings taken from seedling trees. Of course they were worthless. Although they did reasonably well the first few years, they gradually died and all are now gone except one, and that one, I think, is bearing its last fruit.

Late in 1871 orange and lemon trees had fallen in price to $1.75 for choice trees, and I bought a considerable number, together with about 800 lime trees—and here comes lesson No. 2. The seed from which those lime trees were grown, was from the wild lime of the Sandwich Islands; and when they fruited, the seeds would out-weigh the juice, and that was too bitter for any use. I need not say that time and money were lost in the lime enterprise—but lesson No. 2 was learned.

The lemon and orange trees were brought by the nurseryman from good

seed bed soil and planted in a part of his nursery where alkili was very strong; but of this, he knew nothing. The alkali had so acted upon the bark at the collar of the trees that it had become spungy, and in some cases was nearly a quarter of an inch thick, so that out of the whole lot, I saved about 100 trees. The alkali had risen to the surface and had not affected the roots, but the bark at the collars was so corroded, that but few of the trees survived. I had learned how to select lemon trees.

With the exception of two orange trees 30 miles from the Bay of San Diego, and a few trees in the San Luis Rey Valley (which were washed out by the overflow of the San Luis Rey river soon after being planted), I believe mine were the first orange, lemon and lime trees planted in orchards, in San Diego county. I planted the seed of a lemon sent to me from Vicksburg, Miss., and produced one tree, which fruited early and produced a new strain which by the Committee on Nomenclature of the State Fruit Growers' Convention, was named "Agnes", in honor of Mrs. Agnes Harris, wife of U. S. Senator Harris, who sent the lemon to me.

From the original, I budded one of the lime trees before referred to, which I had saved for experimental purposes, and at the end of two years and eleven months, I picked 1,060 fine fruits from the tree.

An eminent writer upon the fruits of the Mediterranean, cites one large lemon tree in Spain or Sicily, which had, in a favorable season, ripened as many as 3,000 fruits, or about nine boxes of lemons. Many ten to twelve year old lemon trees in San Diego county, have produced more than twenty-five boxes of lemons in a single year; and I have known trees to produce more than 30 boxes. This fact shows how much better adapted to the growth of the lemon, are the soil and climate of Southern California than the Mediterranean country. So apparent has this fact become, that many thousands of acres are now planted to lemons; and probably the county of San Diego can boast of the largest lemon orchard in the world, i. e., one thousand acres. And this year's product of lemons in San Diego county may safely be estimated at about 750 carloads.

I believe it was at the suggestion of President L. M. Holt, that the subject now under consideration was assigned to me for a paper, to be placed before the Ninth Annual Fruit Growers' Convention, at Santa Barbara, April 9, 1889, which was reported in the transactions of that convention. This, I think, was the first paper on lemon culture read before a Fruit Growers' Convention in California. The curious can compare then and now.

A comparison of the productive capacity of the soil of Southern California with that of any other country of which we have definite knowledge, is easily made and easily verified.

Given an acre of land adapted to the production of the lemon, and eighty one year old lemon buds set in two years' old orange stocks, well planted and cared for, and before the same area, planted to same trees on Mediterranean soil will produce four (4) dozen lemons per tree, the trees of Southern California will produce from two to four boxes of lemons per tree. Who will say that Southern California will not soon command the markets of the United States?

We will now consider the subject of "lemon culture." And the first question to decide is, the variety of lemons and the quality of trees to plant.

In raising fine stock—domestic animals—from the horse down to the much abused hog, the ancestry of both male and female parent is carefully studied

and their pedigree established to make sure that no mistake be made in the "strain."

If, as is universally conceded, so great importance is attached to the creation of a single animal, with a life so short, then of how much greater importance is the selection of the stock for a lemon orchard, which should yet be young when many generations of men have passed away.

This leads me to conclude that for planting, none but the largest and most robust orange seeds, should be selected from the choicest seedling fruit. This I would do to secure the greatest constitutional vitality for budding stock; and I would reject the seed from budded fruit, to avoid constitutional degeneracy from possible inbreeding.

From the seed bed, I would reject all weak trees—their lack of constitutional vitality being in evidence—and when they were about half an inch in diameter, would bud them. And right here comes a matter equally as important as is the selection of seed.

The variety having been settled upon, exhaust your inquisitiveness in finding a lemon tree of correct habit of growth, abundant fruit and foliage; fruit of proper and symmetrical shape, with the least number of seeds; the finest texture of skin and pulp and largest quantity of acid; and be sure the tree is thornless or nearly so. Now buy all the buds you want for your orchard from that tree.

These elements all brought together, and you are started on the straight road to success in lemon culture. For you have secured uniformity of habit of tree; also of shape, color, size, and texture of fruit. Now select a well drained tract of land, having a permeable soil of reasonable depth, with, if possible, an underlying stratum of clay or compact earth.

Plant your trees on the triangular plan, say 25 to 30 feet apart, the distance being dependent on the variety of tree and the method of pruning; but whatever method is adopted, I would commence by cutting off every tree to a uniform height of 20 to 30 inches. I would not suffer a struggling branch to grow, and would stop its growth by pinching off the end, cutting it back if necessary.

Everyone has observed the tendency to throw out the strongest branches on the east and south sides of the tree. This tendency must be checked in season or the tree will be thrown out of balance, and its symmetry destroyed. Wherever a branch is cut off, there will usually be three branches thrown out; two of them will have a strong upward tendency; the third or middle one will grow horizontally or downward. When this has grown long enough to throw out fruit spurs, cut it off, and if a proper balance of the tree requires the cutting of one of the two remaining branches, do not hesitate to do it, as thereby more fruit spurs are secured.

I would not let a branch grow more than a foot without pinching the end; it is the surest method of making the fruit grow just where it should grow, i. e., along the strong branches where the tree is best able to support it; and which will also secure dense foliage, which will protect the fruit and largely increase the proportion of fancy lemons.

It is hardly necessary to refer to the absolute necessity of constant and thorough cultivation in every direction which the plan of orchard will permit, to the end that all the soil may be kept in good tilth. This should immediately follow each irrigation in summer and each heavy rain in winter.

No fruit grower should expect to take away a succession of crops without

returning at least an equivalent quantity of fertilizing material. And where stable manure is not at hand, commercial fertilizers must be resorted to.

Florida has learned by the experience of many years, that from $25 to $50 must be spent annually for fertilizers for each acre of orange or lemon trees in full bearing. The physical construction of the soil will modify the demand for fertilizing material in a marked degree, but ultimately all citrous fruit growers will see the necessity of fertilizing and will apply to science for direction. If it is a necessity to fatten our steers for market, it is equally a necessity to fatten our lemons.

It is now well understood that when the lemon is 2¼ inches in diameter, and shows any signs of turning yellow, it must be clipped. If it can be left until it is 2½ inches in diameter before showing signs of turning, it is better; and a small proportion may remain till they are 2¾ inches in diameter. This size restriction makes it necessary to cut the lemons every month. No lemons should be picked from the tree—they must be clipped.

It is but a few years since (1890) a prominent journal of horticulture insisted that no lemon should be picked till it was ripe; experience has proved a great educator.

Lemons require to be handled from first to last with far greater care than eggs are handled, if the percentage of loss is to be reduced to the minimum. I saw a man picking lemons who threw them into the boxes, if within throwing distance, say ten feet. And I did not wonder that out of 107 boxes thus picked, only 18 boxes went to the market at the end of two months, or that the net returns for the 18 boxes were but $10.60. One and a quarter cents per pound was refused for the lemons on the trees. Comment is unnecessary.

The sweating and curing of lemons has been brought to a very high state of perfection, and a personal, practical examination of the various processes in any of the large curing houses, will very soon place any observing person in a position to secure good and satisfactory results.

The day is near at hand, however, when all the long and expensive processes of hauling to curing house, sweating, weekly or monthly inspection and culling, and the almost indiscriminate distribution of today, will be abandoned.

The lemon grower will soon see to it that statistics of consumption of the lemon are collected (and of other fruits as well) in every village and city which can be economically reached, and that the quantity of lemons required for the village, city or "common point" of distribution, shall be sent direct from the lemon orchard to such point and shall then be processed.

It is undoubtedly true that not more than fifty to sixty per cent of the fruit which is gathered is consumed, and that forty to fifty per cent is thrown away. The consumer must pay for all this waste. The fruit dealer is obliged to buy about five times the quantity of lemons his trade demands, at any one time, for fear of not being able to obtain them when wanted; and the price at which he must sell them is based upon the probability of loss by being discolored, by decay or by drying. For the moment the skin of a lemon becomes dry or "papery" it is certain that the oil has left it. And when the oil goes out the air goes in, and the fruit immediately becomes mouldy, and cannot be used.

Now suppose the dealers in every village or city or district know that all the lemons required are stored at a convenient point, and would be ready for

delivery when wanted, they can then count on a certainty of supply, and need buy but a box at a time; and can count the loss next to nothing, instead of 25 to 30 per cent, as has heretofore been the case with the dealer. The packer having made his loss already; the shipper having, by shipping direct from the orchard, sustained no loss, can sell at a less price. The dealer need make but a small investment at a time and—having certainty of almost no loss—can sell at about one-half of the usual price; which fact alone, will unquestionably double the usual consumption. It is lack of proper distribution which restricts sale and increases price.

This stricture, i. e., lack of proper distribution, applies to this State, California, as well as to the eastern market. A canvas along the line of the Southern Pacific Railroad for 700 miles from Yuma north, developed the fact that in some villages, lemons were not to be had at any price; and in no place at less than 50 to 75 cents per dozen. And at the same time, the grower was willing to sell at the orchards at 5 to 7 cents per dozen. Here again comment is unnecessary.

It is hoped by the lemon grower, that the new tariff will succeed in excluding the inferior lemons of the Mediterranean countries, so that our fancy lemons shall meet no competition except with lemons of the same class.

We hope the day is not far distant when the necessity for importing lemons from any country will not exist; and that the markets of the country will be fully supplied with fruit equal in quality to any fruit ever imported; and thereby at least five millions of dollars will be annually saved to fruit growers and consumers of this country.

It is not alone the saving of that much money to the people; but it employs a great number of people in an industry, at once pleasant and attractive. The average price during the year will be very much reduced, as methods of distribution are simplified and cheapened; increased consumption will result and the industry will be stimulated.

National City, California, August 23, 1897.

PROGRESS OF SEMI-TROPIC FRUITS IN SOUTHERN CALIFORNIA.

BY DR. F. FRANCESCHI, SANTA BARBARA, CAL.

In the adjourned Session of the American Pomological Society that was held in Los Angeles on January 30, 1895, a paper was read by my esteemed friend, Mr. J. C. Harvey, containing a fully detailed statement of the conditions of semitropic fruits in Southern California up to that date. This report was published in the Proceedings of this Society, Session of 1895, and I cannot do better than to refer to the same as far as generalities are concerned, there being found in it the most reliable information touching the natural conditions that are sure to make the culture of such fruits practically possible and profitable in this part of California. Although this covers only a comparatively limited area the matter appears to be of general interest, on account of the number of would-be consumers in every State in the Union. What I am going to put before you today is a faithful statement of what progress has been accomplished in this line during these last two years. Gigantic strides there have not been, nor could they be expected. Times have been hard for everybody and the California people are slow

to take to new things, if immediate profit is not in view. Still, something has been done; a good deal of experience gathered, and a few new fruits have made their appearance on the market.

CITRUS DECUMANA, popularly known as Pomelo and "grape-fruit," may be considered as a remarkable exception to what is said above. Hardly known as a curiosity a few years ago, there have been 300 carloads shipped this year from California, and a much larger quantity is expected for the next season. Different varieties have been planted or budded, or at least trees bearing different names; but experience with them has been too short to venture any opinion about their comparative merits. There has been a "rush" in Pomelos, like in other things before. Very high prices cannot be expected in the future; lower ones are sure to create a larger demand for this fruit, spreading the taste for it among the masses, instead of keeping it, as at present, a privilege of the few.

ANONA CHERIMOLIA, the Cherimoya of Peru, wrongly known also as Custard apple, although grown for many years, has only recently found its way to the local markets of Los Angeles and Santa Barbara, fetching good prices. This has encouraged more extensive planting, so that in a short time there ought to be some export of these fruits. Meanwhile attention has been brought, not only to the proper selection of seeds, but also to other methods of propagation that will insure permanent and superior varieties. Other kinds of Anona are on trial, mostly at Santa Barbara: namely *A. macrocarpa*, *A. reniformis*, *A. squamosa*, *A. muricata*, *A. suavissima*, and a form of *A. cherimolia* that has been grown for over a century at Reggio, Calabria, in Italy; none of them having shown fruit up to now.

PERSEA GRATISSIMA—These last two years have seen a considerable increase in the planting of Ahuacates, known also as Avocado and Alligator Pears. Several hundred trees have been set out, chiefly at Santa Barbara, Los Angeles and San Diego; fruits have not been exactly marketed, but many more people, residents and tourists, have had opportunity of tasting this delicious fruit. That it is likely to prove a most valuable resource for the coast region of Southern California is proved by the extreme vigor of the trees growing here, when properly treated, and by the perfection of the fruits ripened here. The demand for Ahuacates far exceeds the supply, both in New York and in San Francisco, where they are brought now from the West Indies and from Mexico, respectively. In other large centers, such as Chicago, St. Louis, etc., this fruit is hardly known at all; so that there will be no lack of market for the California product, and at very remunerative prices. As with the Cherimoyas, efforts ought to be directed to obtain early bearing varieties, and to resort to different means of propagation than by seeds.

PSIDIUM LUCIDUM—The so-called yellow strawberry guava may be said to have been brought to the notice of Californians by our honored President, Mr. P. J. Berckmans, in the address he delivered at the last meeting of our Society in Los Angeles. There were already some plants scattered about the country, very few people being aware of their existence. There has been some demand for it these last two years, and more there will be, when its superiority shall be better known, as compared with the common purple strawberry guava, and when plants can be supplied as cheaply as the last named. *Psidium Guayava*, by some people called "lemon guava," is to be found ripening fruit, mostly at Santa Barbara and San Diego, and very good jelly is made with it, either by itself, or associated with the strawberry

guava, by far the most extensively planted in California. Other species or varieties of guavas have been set out on trial in different places. At Santa Barbara there are bearing fruit this year, *Psidium cuneatum*, *P. dicholomum*, *P. Guinense*, and several others are expected to fruit next year. No doubt by the intelligent and persevering efforts of various people in Southern California some new type of Guava may be evolved much superior to any of those cultivated at present, as has happened already in this country with other kinds of fruits.

ANANASSA SATIVA—The Pineapple, notwithstanding what one can read occasionally in the daily papers, has never undergone a thorough testing in Southern California, at least from a practical and commercial standpoint. Plants have been raised and fruits ripened of good size and quality, chiefly at San Diego; but also in the Cahuenga valley and at Santa Barbara. As far as I have been able to ascertain, nowhere has a steady marketable supply ever been raised. Must we give up altogether the idea of profitably raising pineapples in Southern California? I must candidly confess that I am not prepared to give a peremptory reply to this puzzling question, and earnestly wish that somebody would devote intelligence, care and money to make a thorough test on a large scale. Rich sandy lands, well provided with moisture, or to be easily watered, and visited only by very slight frosts, are not unfrequent on our sea coast, from Santa Barbara down to San Diego; the problem of pineapple culture with us resides, I believe, mostly in the influence of the northwestern winds and on the total amount of heat necessary to the plant during its period of evolution. It can be solved only by actual experience.

ABERIA CAFFRA—The "Kai-apple" from South Africa has been ripening quite plentifully its yellow, round fruits, about one inch in diameter, and of a very pleasant sub-acid taste, at Montecito, Santa Barbara, and in other places, I believe, being hardy as far north as Berkeley.

ACHRAS SAPOTA—The "Sapodilla" of the West Indies, "Zapote chico" or "Chico" straight of the Mexicans, is represented by several specimens, at Santa Barbara and in other parts of Southern California. I believe, all of them have proved very hardy, but very slow growers. The chief interest of this tree resides in the gum "chicle" which is imported in such considerable quantities into the United States. Whether the tree will yield a large supply of it here, it will take years to find out.

ALEURITES MOLUCCANA—The "Candlenut tree," a native of the Moluccas, largely grown in India, in the Hawaiian Islands, and in other tropical countries for the sake of its nuts, has been blooming this year for the first time in Montecito, Santa Barbara, being only five years old from seed. Many other younger plants distributed from here are doing well, so that it promises to be a welcome addition to the fare of nut-eaters.

ANTIDESMA BUNIUS—This is another tree belonging to the order Euphorbiaceæ, like the preceding, a native of India and the Malayan Archipelago. It is quite at home at Santa Barbara, where young plants have flowered, but have not yet ripened their red, acid, berries, produced in clusters.

BOLDOA FRAGRANS—Hardly to be included among semi-tropic fruits, as it comes from Chile; but highly interesting for its aromatic leaves and berries, much prized in its native country. Grows vigorously, but has not yet bloomed at Santa Barbara.

CARISSA GRANDIFLORA—From South Africa, sometimes called the "Natal Plum," although its red, oval berries are not larger than a small

cherry, of very agreeable taste and perfume, was introduced several years ago. It is perfectly hardy and very pretty too, having a compact habit and star-shaped white fragrant flowers. *CARISSA ACUMINATA*, from the same region, said to have larger fruits, has been introduced quite recently and appears to thrive just the same.

CASIMIROA EDULIS—The "Zapote blanco" of the Mexicans, offers a striking instance of what may happen with plants introduced from seed. The large, bulky tree existing in Santa Barbara, estimated to be some eighty years old, of which mention is made in several botanical books, bears yellow, round, flattish fruits, less than one inch in diameter, with a few small seeds imbedded in the mawkish, sweet pulp, while seeds of the "Zapote blanco" recently received from Mexico are nearly as big as the whole fruit of the tree here. All other characteristics agreeing, except the size and the taste of the fruit, the only plausable explanation is that there must be many wild varieties of it, and that a poor one was introduced at Santa Barbara years ago. To demonstrate the confusion regarding this tree and to invite further investigations from persons in position to do so, I will add that there exists in the Cahuenga valley near Los Angeles another tree some thirty years old, similar in all respects to ours, except that its foliage is pubescent and not glabrous and that the fruits are somewhat larger. This was introduced from Guatemala where they call it "Matasano" on account of the strongly narcotic properties credited to the fruits. Having found that "El Diccionario de la Academia Española" states that the Zapote blanco or *C. edulis* has been grown quite a long time at Seville, Spain, I made inquiries on the spot, and through the courtesy of Señor Don Francisco de las Barras of that city, have found out that the tree known as Zapote at Seville is not at all the Casimiroa, but instead *Pircunia dioica*, the "Ombu" of the Pampas from South America!

CASTANOSPERMUM AUSTRALE—Of this leguminous tree known as Moreton Bay Chestnut, there is one specimen several years old at La Patera, near Santa Barbara, which is regularly bearing its curious pods, containing one to four, large, roundish seeds, in appearance and taste similar to large chestnuts. Young plants raised from these or from seeds recently imported from Queensland are doing well, but appear to be very slow growers.

CYPHOMANDRA BETACEA—From Peru, commonly known as "Tree tomato," has become more common of late, but not as much as it deserves, the oval shaped orange fruits being very good to eat raw, or cooked in different ways.

CYRTOCARPA PROCERA—A little known tree from the extreme end of the Californian peninsula, has been lately introduced at Santa Barbara. The cherry-looking fruits are called "Ciruelas" by the natives and are said to vary a good deal in size and flavor. The seed has the taste of the Pistachio nut, by some people preferred to it; both belong to the Anacardiaceæ.

EUGENIA JAMBOS—The "rose-apple," from India has been recently ripening fruits at Santa Barbara and in other places, I believe. It is certainly much hardier than its native habitat would indicate. Not many people like the fruit, with its strong attar of roses scent; it ought to make very fine jelly. More likely to become a regularly marketable fruit, promises to be *Eugenia brasiliensis*, very near if not identical, with *E. uniflora*, *E. pitanga* and *E. Michelli*. Its fruits are the size of a large cherry, somewhat four ribbed, of bright vermilion color when ripe, looking as if varnished, of ex-

quisite taste and perfume. *EUGENIA MYRTIFOLIA* from Australia and *E. UGNI* from Chile, are bearing in several places; their small fruits are nice, but it is doubtful whether they will ever find much favor on our markets.

FICUS PALMERI—Recently discovered in Lower California and Sonora, is growing vigorously at Santa Barbara. It is said to make a majestic tree and that its white figs are very nice eating. As other figs fruit quickly here, our plants of it ought to bear quite soon.

FLACOURTIA RAMONTCHI, from India, there known as "Rambustan," and in the West Indies as "Governor's Plum," introduced two years ago, makes pretty, compact, spiny, bushes, admirable for hedges. It has proved quite hardy at Santa Barbara, but flowers have not made their appearance yet.

MACADAMIA TERNIFOLIA, the Queensland nut, is represented by several good sized specimens growing well at Santa Barbara, Los Angeles and elsewhere, none of them having yet blossomed or fruited, as far as I know.

MANGIFERA INDICA, the Mango, well known, at least by name, to everybody, has been ripening fruits for some years at Montecito, and in other places, too. That it can be grown and fruited in Southern California is beyond question; with this plant, also, it will not be with chance seedlings that superior and marketable fruits can be expected; improved and hardier varieties ought to be introduced, and propagated by cuttings, grafting or budding.

MIMUSOPS ELENGI, from India, and *M. DISPAR*, from Natal, both with edible berries, introduced quite recently, do very well at Santa Barbara, but do not appear to be very rapid growers.

MUSA or Bananas of different kinds have been grown for years in California, much more as decorative plants than for the sake of their fruits. Occasionally one finds some very good bananas ripened here, and there is no question that, by selecting the very best varieties and by giving them proper care, growing bananas for the local markets ought to be profitable enough.

MONSTERA DELICIOSA—From Mexico, known as the Ceriman or the West Indies. This also has been grown rather as an ornamental plant, and does well in Southern California, preferably in partial shades. Well established plants will produce the queer looking, pineapple-flavored fruits all the year round.

PASSIFLORA LAURIFOLIA, the "Water lemon" of the West Indies, was introduced only two years ago, and has not fruited yet. It is growing with immense vigor, not unlike *P. EDULIS* and *P. QUADRANGULARIS* introduced years ago. It may become a welcome addition to our fruit supply, or at least prove useful to obtain, by crossing, larger fruited varieties of the very hardy and profuse bearing *P. EDULIS*.

PRUNUS CAPULI—The "Capullin" of Mexico, growing as far south as Ecuador and Peru, is interesting for being the most southern kind of cherry, and likely to grow in climates too hot for other cherries. Grows to a very large tree, being a constant and immense bearer. The cherries are produced in very long bunches, vary a good deal in taste and size on different trees. Two very large specimens some 25 years old are to be seen at Carpenteria, Santa Barbara Co., and a much older one in town, probably coeval with the large Casimiroa. Young plants in nursery have begun to bear when only two years old from seed.

PRUNUS PUDDUM—This is another interesting kind of cherry introduced at Santa Barbara not quite two years ago. Seeds came from Simla in the Himalayas, where it is said to grow up to 9,000 feet elevation, flowering in November, and ripening fruits very early in spring. Our young plants are growing thrifty and vigorous, very distinct from other cherries; some may bloom next November. Either for itself, or for the crosses it may afford, this is likely to prove a valuable introduction.

RANDIA sp., perhaps undescribed yet—the "Papache" of Sonora and Lower California, bearing a fruit somewhat in appearance and taste like the well known Granadilla or *Passiflora edulis*. It is a small tree armed with spines, and having pure white sweet scented flowers, like a Gardenia, to which the genius Randia is closely related. Not unlike other plants from the same region, it will need careful watering in the first stage of life, but afterwards, it appears to grow with the greatest ease.

SECHIUM EDULE—"Chocho" of the Mexicans, "Chayotte" of the French Antilles. Although introduced from neighboring Mexico many years ago, it has hardly been noticed up to now in California, and marketed in Santa Barbara only last winter. It is a vine belonging to the gourd family, with a very large, tuberous root, very nice eating, and bears an immense number of cream colored wrinkled fruits several inches long, which are eaten cooked and seasoned in different ways. It has been very popular for many years on the markets of Paris, where it is supplied from Algeria, and lately is finding great favor on the markets of London. No doubt it will be well appreciated also in our country when better known. It has the advantage of bearing transportation well.

SECURINEGA LEUCOPYRA—An Euphorbiaceous shrub from India bearing white berries and sweet as honey, (they are called "Mahd", that is honey, in Hindoo) will make nice hedges. Plants raised from seed two years ago are doing remarkably well at Santa Barbara.

SOLANUM GUATEMALENSE—The "Pepino," or "Melon shrub"—introduced to California several years ago, but never much spread, on account perhaps of being thought very tender, which is not the case. The fruits are something like a medium sized egg plant fruit, lemon yellow when ripe, striped with lilac, having the perfume and taste of the musk-melon. Before ripening they taste and smell very much like a cucumber. They are occasionally found on the market at Los Angeles, but well deserve to be more generally grown.

This rapid review of tropical and semitropical fruits introduced to Southern California will convey a fair idea of the possibilities offered in this line by this privileged section of our State. In reference to this the most important fact to consider is that careful meteorological observations covering a period of thirty years, together with records based on the growth of much older plants, agree to prove that we are not liable here to "cold snaps" that in a few minutes will ruin the labor and accumulated riches of years. "*Once established, for ever acquired*" will be the appropriate motto to inscribe on the gate of the cosmopolitan Acclimatizing Garden, which we hope to have some day at Santa Barbara.

THE PINEAPPLE AS A MARKET FRUIT, AND THE DEVELOPMENT OF ITS CULTURE IN SOUTH FLORIDA.

BY PROF. E. GALE, MANGONIA, FLA.

Pineapple culture, though confined by climatic conditions to a small territory in the United States, has already become a matter of national interest and is rapidly assuming a commercial importance not dreamed of ten years ago.

The pineapple is a native of the central regions of tropical America. Since its discovery, or in about three and a half centuries, its culture has extended over the whole tropical world. Although this plant shows a remarkable adaptability to the civilizing influence of culture it never fails to remind the thoughtful horticulturist of its close relation to the family of air plants. The better varieties are nearly or quite seedless. But some varieties, and especially occasional samples, yield a considerable number of fully developed seeds. From these natural seeds as well as from artificially fertilized ones, may come in time a long list of new varieties. Some of these will no doubt in the near future add greatly to the pleasure and profit of pine culture. Few will have the time or the requisite persistence to carry this work on, but it opens an interesting field and is of sufficient importance to warrant the attention of the National Department of Agriculture, which I am glad to say it already has.

The development of new varieties is a work requiring much time. But the multiplying of known varieties has also its marked limits. The growth of the pine interest from the nature of the plant must be slow. We have to depend for making new plantations, as well as for keeping up our old fields, first upon the slips that shoot out from or near the base of the fruit; and second, on the suckers that come out from the fruiting plant near the ground, and finally, in case the variety is rare, upon the crown of the fruit itself. These alone are the source of our increase.

Taking an average of all varieties, seasons and plantations, five new plants may be reasonably expected from each fruiting pine. From fifty to ninety per cent of these may be expected to fruit the second year. The increase of pine growing as a business has, as we see, very clearly marked limits. Pine culture in Florida is said to have commenced about the year 1860 on Plantation Key by Mr. Wm. Baker. This work has gradually grown along the keys and slowly extended to the main land of Florida, both on the east and west coast, as far north as the climatic conditions will permit. The plant suffers from even slight frosts, hence some protection is essential along the northern limit of present cultivation. With protection pine culture has been carried as far north as Orange Co., and in some favored localities even farther north. From a business standpoint it is still an open question how far expensive protection can be carried successfully. For fancy or choice varieties of pines some protection from sun and cold is proving a decided success. There seems, however, to be a limit to the demand for expensive varieties of pines while the call for a good pine at reasonable prices seems to fully keep pace with the gradually increasing supply.

There are several problems of interest to both producer and consumer

connected with the matter of increased supply and demand. As far as our own country is concerned the development of this interest must be confined to South Florida, and on account of suitable soil and other contingencies must be specially local even there. This is a matter of much importance to the pine growing interest as a whole. But this interest is here capable of vast development even in these narrow limits. The development of this interest as a whole has so far been slow and expensive. In many cases from various causes first plantations have been total failures. Most of us have stumbled in the dark over the practical questions of pine culture. New varieties have been introduced. Some of these seem to promise success.

Others have had a speculative run at a serious cost to the general planter, to be in the end discarded as unsuited in some important quality for general culture. Then again in some cases costly plants have been made which the demands of the climate and the nature of the pine seem scarcely to require. At all these points there has often been serious personal loss, but from it all the general public has gathered some valuable lessons. The day of experiment has not even yet passed, but we are far better prepared for the profitable extension of our pine culture than ever before. After the experience of the past season the planters will be far more conservative as to the extensive handling of new varieties. Of course, experiments will not and should not cease, but the general planter will be slower to make extensive investments in new and costly varieties. It comes simply to this, that hitherto parties illy able to meet the inevitable losses, have been induced to invest in varieties that were at the time experimental only, in the end to be sadly disappointed. The past year has given our people some valuable lessons. It is of all things most essential that pine culture should be made at the earliest possible time to take its legitimate place as a business enterprise, by which one of the choice fruits of the tropics can be liberally and cheaply furnished to the millions. There is probably no more healthful fruit than the pine. Anything that can be made to extend its general consumption, either by lowering the cost of its production or by lengthening the period of its ripening, must be counted as a national blessing. The effort to lengthen the ripening period of the pine by the culture of early and late varieties, or by the culture of the varieties that have a tendency towards winter fruiting, or by encouraging that quality in any of them, must be counted not simply a question of profit, but one also of sanitary importance to the world at large. Those who have watched the slow development of the pine growing interest in Florida for years are convinced that there is a wide field here for skillful and painstaking culture.

Pine culture is now and always will be in great need of men who are able and willing to run chances by the introduction and trial of new varieties. We have fresh fruit now (at some seasons in moderate quantities) for about ten months in the year. The increase and extension of this supply, by the selection of early and late varieties, as well as by some changes in our mode of cultivation, is an important question as far as the pine growing interest is concerned.

Another important question is to find some more reliable mode of putting on the market in good condition the tenderer varieties of pines. It is a well known fact that the best pines cannot be successfully put upon the market by our present mode of handling and transportation. The best pines are far too tender for our rough modes of handling and our ordinary slow trans-

portation. The Queens have been a source of serious loss to the growers the past season because many of them have reached market in bad condition. The same must be said also of the Abbakas. Take again the Pernambuco pine, which to enjoy in its perfection should be eaten with a spoon, as we eat an orange. It is certainly ruinous to put this mass of delicate sweetness into an ordinary crate and trust it to the tender mercy of a six or eight day's transit to the market to be sidetracked—it may be—to suit the convenience of the transportation lines. Either our Northern friends must forego these most delicious fruits of the tropics, or they must help us to devise some more successful mode of putting these fruits on the market. The question here involved concerns not simply the pine grower, but as well the transportation lines, the commission men, and more than all, the consumer.

There are varieties of pines that will endure much rough handling. The Red Spanish as far as known yet takes the lead among hardy pines. While we are unable to command any more expeditious and careful method of shipping, this variety must retain its lead with the general planter.

The market demand for pines has rapidly increased during the last four or five years. We have every encouragement to extend their cultivation as fast as the conditions will permit.

The regular shipping season for the pine commences in Dade county usually the last of May and closes about the first of August. After that there will be occasional small shipments until well into the spring of the year. So that the period of ripening really extends over at least ten months of the year. How to make the winter supply larger and more reliable is one of the problems of the hour.

Pine culture is an industry that can be most safely and successfully built up from moderate beginnings. The supply of slips, from the nature of the case, must always be limited. If large plantations are to be started, many of the slips will have to be imported. This not only involves extra expense but it can only be done at considerable risk of injury in shipment. The slips of the common varieties can usually be obtained at about $5.00 per thousand. From 8,000 to 12,000 are planted on an acre. The season of planting extends from July through September. If healthy slips, from eight to twelve inches long can be obtained in July, the sooner they are planted the better. Good slips planted in July or August and well cared for should yield a crop one year from the following May. If not well tilled and fertilized the plants will require another year to fruit. A small per cent of the plants will require the additional year to fruit even with good care.

The returns from pine culture where the conditions are favorable really place this business in the front rank among fruit-growing interests. While there are returns that seem almost fabulous, there are others, as is the case with all horticultural pursuits where there is little to report but loss. It may be safely stated that five acres judiciously devoted to pine culture will bring more substantial returns for the support of a family than many a large farm at the North.

One special feature in this industry is that the land best suited to pine culture is to a large extent unsuited for farm, or garden purposes, and at the same time commands the most healthful locations in the South. It is on the dry white sand soils of South Florida that the pine thrives best. And such soils have thus come to be the source of vast wealth to the

State. It is now certain that every acre of this land can be made to yield profitable returns to the planter.

In no way can we reach more just conclusions as to the actual profit of pine culture than by giving the experience of those engaged in the business. But it should be noted in the outset that the returns here in the South of all garden and field crops, and for pines especially, as compared with past years have been very unsatisfactory. Never have planters as a class met more discouraging conditions than this year. And the following statements are presented simply to show what can be realized under the most disheartening conditions that our people have ever been forced to meet. These reports cover only what may be termed ordinary farm culture of the common Red Spanish pine, with all ideas of speculative prices and returns eliminated. The parties here reporting are personally known to me and for their reliability I have the best of reasons to vouch. The heated term at the North this year came just in time to meet our heaviest shipments and in not a few cases the result was disastrous.

The statement of L. C. Hillhouse, P. M., at Palm Beach.

In sending this statement Mr. Hillhouse says, "I have given you the exact account of expenses and returns. There are several points that a stranger should note. In the first place land can generally be cleared at $50.00 per acre. And the land once cleared it is done for all time to come. Hence the cost should not be charged up to the crop. I paid $5.00 per thousand for my slips and hauled them myself. Now they are selling for $4.00. And they are expected to yield four crops. So only one-fourth of this item should be charged to the first crop.

"You will notice also that the last fertilizing was in September. I think that if I had given them $25.00 worth of fertilizer in February, I should be $50.00 better off."

Aug., 1895. To grubbing one and one-fourth acres of land	$75 00
Preparing land, hauling slips and planting	31 48
To 13,500 slips ($5.00)	65 50
March 10, 1896. Fertilizer and working in the same	24 27
June 20. Fertilizer and working	19 40
Sept. 19. Fertilizer and working in	26 76
Crates and paper	37 11
Picking pines, making crates and shipping (20 cents)	51 40
Total cost	$331 92
Cr. By crop shipped from May 26 to June 26, 9,000 pines (257 crates), net returns	$329 71
Total receipts for slips	100 00
Total receipts	$429 71

These are encouraging figures. The items of expense, though not all chargeable to the present crop, are still worthy of note by any one interested in pine culture.

Mr. J. C. Clark, P. M., at Lake Worth, reports on an acre of pines from his place a few miles south of West Palm Beach, as follows:

Net returns from 214 crates of pines	$239 68
For slips	75 00
Total	$314 68
Total expense of the crop	148 90
Net returns	$165 78

Mr. Dwight A. Allen, West Palm Beach, reports as follows on a small plat consisting of 3,587 pines, occupying a small fraction less than one-third of an acre:

Net returns for pines	$181 82
For slips	33 40
Total receipts	$215 22
Dr. To work and fertilizer	43 50
Net returns	$171 72

The following is a statement of returns from a field of 18,000 pines grown like all the others on the white sand land, and is indicative of what can be duplicated all along this east coast. The figures show only the most ordinary care and as such, are worthy of note:

The returns were for the yield of 13,500 pines out of the 18,000 planted, being

398 crates, netting		$310 64
Slips (estimated)		115 95
Total receipts		$426 59
Dr. To marketing, crates, paper, etc.	$84 74	
Fertilizer	55 00	
Cartage	22 20	
Care of field	36 00	
Total		197 94
Net returns for the crop of 1897		$228 65

It will be noted that intensive culture is the one great essential in pine culture as in all garden crops. It is a well known fact that a bad market always emphasizes the superlative importance of the highest culture.

There are scattered everywhere all over our land thousands who for themselves or some dear member of their families demand a home in a milder climate, and there are thousands who find the days of hard work on the farm, in the office, the school room, the professor's chair, the shop, the store, are passed. Even life in thousands of such cases demands a change. A little home in the pine growing region is open before such—not a transient lodge, not a stopping place for a few months of the year, but a home, where all the comfort and beauty and fruitfulness of the tropics

can be gathered from our own gardens, where living practically in the open air for twelve months of the year we can gather the luxuries of the tropics from our own gardens day by day with our own hands.

ELBRIDGE GALE.

Mangonia, Florida, Aug. 20, 1897.

CLASSIFICATION OF VARIETIES OF PEACHES.

BY PROF. R. H. PRICE, COLLEGE STATION, TEXAS.

That there are well defined types of peaches which behave differently in the same latitude is well known, and some knowledge of the classification of varieties as affected by climate is necessary, not only to the practical grower, but to the scientist as well. The peach has been so modified by climatic influences and crossing of the different types that it is difficult to devise a system which will include all varieties and not be subject to some criticism. But if a system can be devised by which one can distinguish a large number of varieties and predict within a reasonable degree of certainty which types are likely to succeed in a given section, a long step is made in the direction of most valuable knowledge. The one based upon the presence or absence of glands on the foliage is of considerable value in distinguishing varieties in the nursery before they fruit. But we have varieties which bear different glands upon the same tree. Seedlings from a given variety may bear entirely different glands, and vary also in the adherence or non-adherence of flesh to the pit, and this is true even when the variety has been fertilized by its own pollen.

There are types coming from China, Japan, and Java, and others which are now being built up in the southern part of the United States, which the above points do not distinguish with clearness. We have seedlings from the Honey peach which came from China in 1854; seedlings from the Peen-to, which came from Australia in 1869; then again there are seedlings of the Spanish or Indian type; all of which are adapted to more southern latitudes than those of the Persian strain, which constitute the bulk of Northern orchards. These two types are proving valuable along the Gulf, where the peach has not been grown as successfully as it has been farther north. It is important now that the botanical characteristics of each type (which we shall call race for a better term) should be recorded with clearness, and the climate in which each grows best be pointed out as clearly as possible.

During the past four years the peach has been one of my special studies. Our experimental orchards contain 190 varieties. Large experimental orchards have been studied near the Gulf and over a thousand miles farther north. From what I have thus learned it seems to me that what is known as the "Onderdonk classification" is the best. An outline of this scheme appears in the report of the United States Department of Agriculture for 1887, page 648. Some of the distinctions made in this classification can not be noticed with decisive clearness a few hundred miles farther north, but in the semi-tropical climate of the coast region the characters are striking. This at once indicates that the different races originated in different degrees of latitude and at different altitudes. These facts are further substantiated by botanical characteristics. We divide the peaches now cultivated in the

United States into five races: (1) Peen-to; (2) South China; (3) Spanish or Indian; (4) North China; and (5) Persian. By race is meant "variety so fixed as to reproduce itself with considerable certainty from seed".

Seed Characteristics—The shape, size and corrugations of the seed are so well marked in the more distinct representatives of the different races that after a little practice one can distinguish them apart by this means alone. The seed of the Peen-to is nearly round, much compressed at the ends, corrugations small and somewhat rounded. The seed of the Honey is oval with apex slightly recurved, corrugations slight, prominent flange on the side. Seed of Spanish is large, oval, nearly flat, apex prominent, corrugations very long and wide, at the base they run more longitudinally than in any other race, flange on one side often prominent. Seed of North China is nearly round, very thick, corrugations rather slight and irregular, apex rather prominent. Seed of the Persian is somewhat round, more flattened at the base than any other, corrugations prominent towards apex, but very seldom extend to base, apex more or less prominent. A resemblance can be seen between the Spanish and the Persian, and as there is no definite history in regard to the origin of the Spanish it is probable that the types had the same origin. The Indian type of the Spanish can only be distinguished from the Persian, in many cases, by the heavy down on the fruit, which is characteristic of the Spanish.

THE DIFFERENT RACES AS AFFECTED BY CLIMATE.

1. *Peen-to (Prunus platycarpa Decaisne)*—Tree rather large; branches vigorous, willow like, branching at an angle of about forty degrees; flower large, opening early, frequently in January in the Gulf States, often at a low temperature and very irregularly; leaves, narrow and long, inclined to be evergreen; fruit much flattened; skin white and mottled with carmine; flesh white; flavor sweet, with peculiar almond twang. It is adapted to the northern part of the citrous belt, in which climate it ripens from May 1st to June 1st. It has a tendency to sport and some valuable varieties are now coming from it for the extreme southern part of the Gulf States where other races will not grow successfully.

II. *South China Race*—(The parent of this race is the Honey peach, *Prunus Persica*. B. & H.). Tree medium sized; branches leaving the trunk at an angle of about fifty degrees and curving upward; buds quite prominent; flowers always large and very abundant, with greater resisting power against cold than any other race tested in this climate; has borne crops annually during the past four years, when many other varieties belonging to different races failed; foliage small, slightly conduplicate, distributed all along the limb, color dark green, in fall slightly tinged with red; requires short season of rest; fruit rather small, somewhat oval in shape, slightly flattened, suture very deep in basin, but does not extend more than one-third the way down; apex long and recurved; flavor peculiar honey sweet. Supposed to have originated in Southern China, from which the seed came. This race is adapted to more southern climates than any other, except the Peen-to. Honey seedlings are proving very valuable for the Southern Gulf States.

III. *Spanish Race*—Tree very large, except in Indian type, which evidently has considerable Persian blood, judging from the color of the young wood, which is reddish, the naked places on the bearing wood and the corruga-

tions on the pit and its general shape; limbs large, long and spreading; branches low and drooping; flowers nearly always large; leaves small and flat, persisting late in fall and turning slightly yellow; fruit very decided in character, ripening very late, nearly always yellowish when mature, and covered with heavy down. In the Indian type the fruit is striped with red; a heavy bearer and sure cropper in its proper isotherm. Seems to have come from the Spanish type brought from Spain by the Spanish missionaries and distributed among the Indians of the extreme Southern States. Perhaps it is owing to successive seedlings in more favorable climate that the type is now varying. All over the Southern States one hears the expression that seedlings are surer bearers than budded trees, and there seems to be some truth in this belief, because by growing seedlings continuously varieties may adapt themselves to climate. This type is adapted to isothermal lines north of where the South China race flourishes.

IV. *North China Race*—The original Chinese Cling, which is a dwarf tree near the coast, is the parent of this race. It is not at all adapted to regions along the gulf. Two or three hundred miles farther north it and its seedlings do well. It is the parent of the largest peaches in the United States; blooms later than the Persian, and the flowers are nearly always large; foliage large and flat, turning towards autumn, in the Southern States to a peculiar pea-green, and this type among others in an orchard can be detected with ease by this means alone. The color of the foliage foreshadows the color of fruit, as none of the seedlings, as a rule, are highly colored. The parent came from China, and it is adapted to zones farther north than those suited to the Spanish.

V. *Persian Race*.—Tree medium size to large; limbs short and thick, with long naked places; bark usually rich purplish and red on young wood; flowers large or small in different varieties; foliage crimpled and conduplicate, with purplish tinge before falling, which occurs early. This race requires a long period of rest, which indicates that it has had a more northern origin than any other, supposed to have been Persian. The seedlings now form the bulk of Northern peach orchards. Fruit usually the most highly colored and of the finest flavor. In this race we sometimes find varieties with yellow flesh, but their flavor is not as good as the others. It is almost useless to plant this race in the southern part of the Gulf States.

There are some ornamental varieties which will not be mentioned here.

BEHAVIOR AND PECULIARITIES OF THE STANDARD FRUITS ON THE SNAKE RIVER PLAINS OF SOUTH IDAHO.

BY ROBERT MILLIKEN, SECRETARY IDAHO STATE HORTICULTURAL SOCIETY, NAMPA, IDAHO.

The standard kinds of cultivated fruits vary considerably in characteristics in the different sections of our country. Many fruits which are successful, and which arrive at great perfection of form, color and flavor in certain sections, are frequently quite inferior in some of these respects in others, or the trees which thrive and grow with the most satisfactory luxuriance and healthfulness in one place are quite often deficient in constitutional vigor and healthfulness in other well known and popular fruit growing sections.

Since the first settlement of this Northwest Territory, now included in Oregon, Washington and Idaho, much interest has been attached to the region as a fruit-growing country, on account of the great perfection which certain of the standard fruits attain, particularly cherries, plums of the *domestica* or European class, apples, pears and small fruits.

Five years' residence and experience in this part of our national domain, amongst the orchards and with the fruit growers, has afforded me opportunities for observing some of the peculiarities of the orchard products, the conditions affecting them, and has led me to look into the causes likely to be instrumental in affecting the trees in the nursery and orchard, and their resultant products.

The climatic conditions vary greatly in different sections of the region named, from the warm, moist coast region, occupying the first 100 to 150 miles between the Cascade Mountains and the Pacific Ocean, through the semi-arid plateaus of Central Oregon, Eastern Washington, and Northern Idaho, to the thoroughly arid plains of the great Snake River, which with devious windings and twistings finds its way from the Yellowstone National Park, and the mountains of Northwestern Wyoming to the ocean.

Those who saw for the first time the fruits of this region at the World's Fair at Chicago in 1893 were astonished at the wonderful size, beauty and perfection of the same, and to a great majority of them it was surely a revelation.

It will be my effort in this connection to note some of the peculiarities of the trees and fruits of that part of the plains of Snake River lying within the State of Idaho, and within 150 miles of where the river enters the mountains, separating the great inter-mountain arid region from the semi-aris already referred to.

The entire plain extends wholly across the State of Idaho and a short distance into Oregon, and is approximately 450 miles long, and having average width of about 50 miles, with numerous tributary valleys coming down from the mountains on either side. The altitude of the valley proper is about 2,000 feet above sea level at the Oregon line, reaching 6,000 at the northeast corner of the State where the valley begins.

That part of the valley under consideration has an elevation of 3,000 feet and below.

The entire valley is within the arid region as generally understood, not

enough rain falling between April and November to sustain cultivated crops, hence no culture is attempted without irrigation.

The soil is volcanic, with great sheets of lava underlying the entire valley. The depth of the volcanic deposit at the point where this is written being something in excess of 300 feet.

There are a number of features in the behavior of the standard or generally cultivated fruits that are worthy of notice. First I would note the wood growth, second the great productiveness of the trees, and third the variation of the fruit itself in form and characteristics from the usual type of the eastern part of our country and of Europe.

The first general feature to attract attention is the great growth of wood the young trees make in the nursery and during the first few years in the orchard. In this latitude, 43 to 44 degrees north, and at this altitude we would scarce expect to find the seasons long enough, and the conditions favorable for so great a wood growth as is common in young trees until they come into bearing condition. Nurserymen must needs make sale of their trees at the end of the first year in the nursery, when healthy and well grown, since if kept longer they would become so large and heavy that it would be impracticable to handle them. Trees are quite as heavy, as a rule, at one year from bud or graft when well cared for, as at two and three years in the Eastern States. It is not an unusual thing for blocks of well grown trees of plums, sweet cherries and pears to reach a growth of from 7 to 10 feet, and apple and sour cherries 5 to 9 feet, the first year. This rampant growth continues in the orchard when the conditions are favorable, during the first three or four years or until the trees are established in bearing.

The second feature, and one very difficult to intelligently describe in writing is the tendency to heavy bearing. As a rule, excessive or even quite strong wood growth, is not conducive to early or profuse fruitfulness, yet this region seems disposed to set all general laws at defiance and follow ways of its own.

Apple and plum trees are not generally expected to begin bearing until 4, 5 or 6, and often 8 years of age, pears even longer. Now what do we find here? In this valley it is not unusual for some apples, Early Richmond cherries, Italian prunes and some others, notwithstanding the great growth of wood the trees make, to set quite a quantity of fruit the next year after planting, and by the time the trees in the Eastern States are first showing an occasional specimen, to be yielding bountiful crops for market. Pears often begin bearing the third year from setting and continue increasing from year to year as they attain age and size. I have myself helped gather a water pail full, more than a peck, of peaches from a single tree less than 18 months planted, and only three years from the bud.

There is an orchard of 4,000 trees of apples, within a half mile of where I now pen these lines, planted in the spring of 1892, in which a large number of the trees have broken down and been ruined with the heavy load of fruit thereon, and but for the care of the owner in putting a force of men at work to remove a part of the excess, much greater loss would result before the fruit is fully grown. I have many times attempted to convey to my friends and correspondents by letter or verbal description the tendency to fruitfulness so apparent in the orchards here, but have been obliged to give it up, and say "language fails to convey to you the idea, you must see it for yourself to understand it."

This does not occur in alternate years with an "off year" between, but year after year consecutively, nor is it confined to any one class or kind of fruit, but is the rule with the early cherries, the apricots, pears, peaches, plums, prunes, apples and all the standard kinds of fruits, varying at times with the vicissitudes of the season and conditions. Total failures are not known.

It might be noted in this connection that after the orchards have seen some years' bearing that the tendency to so great a wood growth is not so apparent, and as the trees as a rule bear annual crops they do not attain so great size as in sections where they are prone to bear only in alternate years. This applies particularly to the apple, pear and plum, including prunes.

Thirdly, I would call attention to the character of the fruits themselves, first as to form and appearance, and second to its quality. There is no very marked distinction in the form and coloring of any of the common fruits except in the apple, and I will detain you to note but one characteristic in that fruit that will distinguish the apples of this section from well grown specimens from other noted apple regions. While apples of Idaho are exceeded in size and color by those of no other section, the one peculiarity distinguishing them is the tendency to depart from the normal form and assume a more conical one than the type and possess a ribbed or plaited margin to the rim of the calyx basin.

This tendency was so conspicuous in the fruit shown at the World's Fair in 1893 as to give rise quite frequently to a question of the identity of the variety, and led to many disputes. It is claimed, but how correctly I am not able to say, that apples having a tendency to the conical form as Yellow Bellflower, Blue Pearmain, Jonathan and such are more generally successful than flat varieties. One thing I do know, that Ben Davis seems above its latitude and does not attain the perfection it does in the Missouri Valley 600 miles farther south. I have observed the same of the Ralls Genet, while Greening, Baldwin, Newtown Pippin, Yellow Bellflower, and other favorite New England sorts succeed admirably.

Now as to the quality of the fruits themselves. Unsupported assertion is not argument, and the limits of this paper will not permit going into detail to prove my statements, so they must go for what they are worth. I wish to show that there is no other fruit region in our country in which are produced fruits richer, of higher flavor, and possessing a greater sugar content.

The fruits of this valley, particularly, have the property of remaining for a long time in the fresh state without decay. It is one of their characteristics that instead of rotting, as in humid climates, they are inclined to wither and dry up. On this account the fruits grown here will stand shipment to a distant market with a smaller per cent of loss than from many other places having a more moist atmosphere.

Having briefly examined the character of the tree and its fruit, as regards its behavior in this part of the arid plain of Southern Idaho, let us inquire as to the causes operating to produce these results.

The question naturally arises, Is it the soil, or the water, or some inherent quality of the air? My attention was directed to this question between four and five years ago, when coming down the valley on a train, by a remark of a stranger, in substance that, "It is not in the soil of this country that these remarkable effects are produced, but in the atmosphere. If you

were to take this soil to Nebraska or Iowa you would not get the same effects, even if the latitude is lower and the seasons longer."

This position I took issue with, and we argued the question at some length, without either convincing the other that he was in error.

Since then I have given the subject much attention and can almost agree with my unknown traveling companion. True, soil and water are important factors, but I truly believe that the atmospheric conditions are the most potent factors in producing the peculiar effects.

As already stated, the soil is of volcanic origin, composed chiefly of volcanic ash and decomposed rock carried down by the waters from the adjacent mountains, rich in mineral elements essential to the production of trees and fruits, other conditions being supplied.

The valley being wholly surrounded by mountains, the air currents have parted with their moisture in the higher levels adjacent, and enter and blow across the valley without giving any precipitation during the warm or growing season.

Now let us examine the conditions and note the results. An extremely rich soil, an ample supply of the water of irrigation, itself highly charged with elements of fertility absorbed from the rocks and alluvial beds over which it has flowed in its way from the melting snow banks to the plain below, skillfully applied, and an atmosphere thirsty to an extreme degree, and note the results.

On account of the absence of vapor in the atmosphere, there is in consequence a rarity which allows the sun's rays to penetrate with great force. These conditions produce a tension, an activity of the vital forces, drawing through the soil and the plant tissues a great amount of the water, the result of which is the great growth of wood already noted.

In a humid climate the result would be a large, succulent growth, too coarse and tender to endure the cold of winter. The results here are different, the wood being healthy, firm and well matured. The forces operating to produce this condition of wood growth is conducive to the metamorphosis of the buds, so that great quantities of fruit buds are produced in the fall, hence the extreme fruitfulness of the trees.

A tendency is apparent, particularly in pears and cherries, to form fruit buds prematurely, and bloom and set fruits at unseasonable times during the season from August to October.

It will only be necessary to recall these conditions and note the operation of these vivifying elements to observe the effects upon the character of the fruits themselves. The great amount of evaporation of moisture and consequent elaboration of sap, brings about a greater condensation of the fruit juices, giving a higher flavor, a greater per cent of the fruit sugars, and a fruit less prone to decay, and losing a less per cent of its weight in evaporation and curing.

These are some of the ways in which the common fruits behave differently here from what they do in the Eastern States, and in my judgment a prominent cause for the difference.

PROGRESS OF HORTICULTURE IN CANADA.

BY L. WOOLVERTON, SECRETARY ONTARIO FRUIT GROWERS' ASSOCIATION.

Since the last meeting of your respectable Society, considerable progress has been made in the art and science of horticulture in the Dominion of Canada.

The Dominion Experimental Farms, under the charge of Director Dr. Wm. Saunders of Ottawa, have not only assisted the farmer in his operations, but have extended a helping hand to the fruit grower and gardener through the horticulturist, Prof. John Craig, aided by the entomologist and chemist, Profs. Fletcher and Shutt respectively.

In our own Province of Ontario, the Ontario Agricultural College at Guelph has enlarged its work in the line of horticulture by appointing a professor in that branch, in the person of Mr. H. L. Hutt, an honor graduate of the College, who is devoting himself entirely to the interests of the fruit grower.

Prof. Hutt has been taking up one fruit at a time as a specialty, and doing thorough and careful experimental work. His last report upon 150 varieties of strawberries tested shows the weight of the product of each variety in ounces, and other important particulars with regard to their respective merits.

The report of the Bureau of Industries shows a decrease in the acreage of orchards in Ontario during the last ten years. This is not to be taken as indicating a retrograde step in the fruit industry of our country. It means that a great many of the orchards that contained unprofitable varieties have been rooted out, and, instead of large orchards of unprofitable fruits, smaller areas have been planted to more remunerative fruits, to which higher cultivation is given. I mean to say that the cultivation of our gardens is becoming *intensive* rather than *extensive*.

The Fruit Growers' Association of Ontario has been of great service to our growers in giving them information concerning the best methods of fruit growing. The directors of this Association are gentlemen who are foremost in the districts which they represent, and, as our Association enjoys government patronage, its meetings are necessarily held in various parts of the Province, where there is the most need of the information which these gentlemen are able to give.

A new departure has also been made by the Department of Agriculture for Ontario in the establishment of special fruit experiment stations in various parts of the Province. Each of these stations has its specialty and is furnished with every variety of fruit to be obtained under that head. Each experimenter is required to make a careful report to the Department each year, and these reports are brought together by your humble servant, the Secretary, into a report, which is becoming yearly of increasing value to the public. One important feature which we are now undertaking is the describing and illustrating by photogravures of all the varieties of fruits that are grown in our country. These descriptions are written, not from a nurseryman's point of view, but from that of the fruit grower, and when a variety is found to be unprofitable or ill-adapted to a section, it is so stated in this report.

Another important departure which may be suggested is the public spraying experiments which have been undertaken by the Department of Agri-

culture for Ontario at the suggestion of the Fruit Growers' Association. A superintendent has been appointed by the Department, who has charge of this work and makes a full report at the end of the season. He has under him three distinct gangs of workmen, and each gang operates in ten different sections of the province, visiting each place for spraying experiments six times during the season. Full publicity is given to this work and growers are invited to witness the experiments at each place. It is not an unusual thing to see forty or fifty growers gathered at the experimental orchard to witness the work and ask questions concerning it. Each year thirty different places are chosen for these experiments, and in this way the whole province is becoming acquainted with the methods and value of spraying with Bordeaux and other mixtures. It is to be hoped that we will thus be able to overcome the apple scab, grape mildew and other of our most serious fungi, and produce fruit that will be fit for export to the best markets of the world.

The San José scale, which is such a terror both in the United States and in Canada, has been found in one or two orchards near the border, where trees have been imported from New Jersey. Prompt measures have been taken by the Department of Agriculture for the destruction of the trees, and the Director of the Dominion Experimental Farms has published an emergency poster and distributed it through all parts of the Province, giving a description of the scale and the methods of destroying it. We hope, however, that it has not gained a footing in Ontario and that we will be able to prevent its doing so.

One of the most important departures in aid of the fruit grower is the encouraging of the export of tender fruits in cold storage. The Department of Agriculture for the Dominion has erected a cold storage warehouse at Grimsby for the chilling of these fruits, and from this they will be loaded on refrigerator cars for the seaboard, whence they will be carried to Europe in cold storage compartments in the steamships.

With regard to the fruits which are most profitable in Ontario, I might mention that we grow with great success the Crawford peach, the Bartlett pear and the Northern Spy apple, and these are the varieties which we hope to export to Europe with the greatest prospect of success.

In my experimental orchard I am myself testing about sixty varieties of cherries and hope in a short time to be able to give a full report with regard to some of the rarer kinds. The old varieties of English cherries I have been growing with good success. In the young experimental orchard I have been noting the comparative vigor of some of the varieties, and here append a table showing the result of this season's work in this direction:

	Habit.	Vigor.		
		Growth in inches.		Scale 1 12.
		July 12	Aug. 21.	
Prunus avium (sweet cherry group).				
Hearts—				
Black Eagle		12	24	7
Black Tartarian	Upright	14	30	8
Coe Transparent	Upright spreading	16	36	9
Downer Late	Medium stout	12	33	8
Early Purple		18	30	8
Elton	Upright, spreading	18	39	10
Governor Wood	Spreading, stout	18	43	10
Tartarian Improved	Sprawling, spreading, slender	13	36	9
Bigarreau—				
Cleveland	Upright, stout	16	30	8
Centennial		12	24	7
Elkhorn	Upright, stout	18	30	8
Napoleon	Upright, spreading, stout	16	30	8
Rockport	Upright, spreading, stout	18	44	10
Schmidt Bigarreau	Upright, spreading, stout	18	30	8
Yellow Spanish	Spreading, stout	18	36	9
Dukes—				
Belle de Choisy	Upright, stout	11	36	9
Belle Magnifique	Sprawling, medium, stout	10	24	7
Empress Eugenie	Upright, spreading, stout			
Late Duke		6	24	7
May Duke	Upright, stout	7	32	8
Reine Hortense	Spreading, stout	10	36	9
Royal Duke	Upright, medium, stout	7	30	7

	Habit.	Vigor.		
		Growth in inches.		Scale 1 10.
		July 17.	Aug. 12.	
Prunus Cerasus (sour cherry group).				
Kentish—				
Montmorency	Spreading, slender		16	4
Montmorency ordinaire		8	16	4
Olivet	Spreading, slender	6	20	6
Morellos—				
Ida	Spreading, slender	15	24	7
Morello	Spreading, slender	9	17	5
Wragg	Spreading, slender	7	17	5

I close by extending to the American Pomological Society the fraternal greetings of the Ontario Fruit Growers' Association.

THE FRUIT INDUSTRY OF NOVA SCOTIA.

BY R. W. STARR, WOLFVILLE, N. S.

The fruit industry of Nova Scotia, so far as the export of apples is concerned, is at present confined to the Valley of Kings, and Annapolis, and a small portion of Hants Counties. Quite large areas are being planted in other counties of late years and with fair promise of success, wherever proper attention and cultivation have been given the young orchards.

This is notably the case in the central part of the counties of Lunenburg, Queens, Shelburn and Yarmouth, in the western part of the Province, and also in Pictou in the east, so that in a short time those counties will not only supply themselves, but will be supplying such varieties as suit their localities to the markets of the world.

The varieties of apples that seem to suit both the growers of Nova Scotia and the consumers on the other side of the Atlantic best, and consequently are rated as the best commercial apples, may be classed as follows, according to their season for shipment and use in the market:

1st. Gravensfein. This apple is grown in very large quantities, and although rather tender for careless shipment, is, if carefully packed and shipped in cool, well ventilated holds, capable of being placed in foreign markets in prime condition. The season for it is from Sept. 15 to Nov. 15.

2nd. The Banks, or Red Gravenstein, which is a sport from the other, has been propagated until it has become a distinct variety in color and form. Other characteristics being much the same.

3rd. Ribston. A reliable cropper and always in demand in London as a dessert fruit. Season October to end of the year.

4th. Blenheim. Large, handsome, reliable, yellow with red cheek, sometimes nearly all red. This brilliancy of color gives precedence in London markets over the same apple which is largely grown in Kent and Berks, England, but with very little red, if any. Season about the same as Ribston and like it requires cool storage to carry well.

5th. Tompkins King. This fine, large, red fruit is a great favorite in every market and will always bring top prices. It requires high cultivation to make it a reliable cropper and is frequently condemned as a "shy bearer" by careless cultivation, but give it a fair soil and a well balanced ration of food and you should have no reason to complain of the returns. Season November to February.

6th. Baldwin. This well known variety requires no description. Next to Gravenstein it is the most universally grown of any sort. It has some serious faults and many good qualities, but we cannot do without it until we get something else better for a mid-winter and early spring season.

7th. Northern Spy. With good cultivation this is a reliable cropper, and with skillful packing, cool storage and careful transportation will bring top prices in almost all markets. It is generally classed as a long keeper, but is rather too tender and treacherous to stand later shipments than March.

8th. Golden Russet (W. N. Y.). This apple is largely planted as a fair cropper, reliable keeper, good carrier, and a great favorite in the London market from February to April.

9th. Fallawater. This is one of our largest, handsomest apples, and on light, dry loam is a first-class bearer, and if picked a little early and stored in a cool cellar is one of the best for spring shipment, bringing the highest market prices.

10th. Nonpareil. Our famous long-keeping russet. This apple was brought into Kings from England about 1762 by Col. John Burbidge, an English officer, and disseminated under the above name. It appears to be closely allied, if not identical, with Roxbury Russet. (Query—May not the Roxbury Russet prove to have been like the Bartlett pear, imported from England and renamed?)

These may be considered our best standard varieties. Of course, we grow a great many other sorts, some of which, as R. I. Greening, Twenty Ounce, Wagener, Stark, Ben Davis, etc., we export, and others, as Yellow Transparent, Red Astrachan, Early Harvest, Sweet Bough, Chenango, Fall Jennetting, Yellow Bellefleur, Talman Sweet, etc., etc., etc., are grown for local markets only. I have no correct data of the amount consumed by those markets, but it is large, as we supply the cities of Halifax and St. John and the towns of Truro, Amherst, New Glasgow, Moncton, Sidney, Charlottetown and Newfoundland, and numberless villages, with most of the apples they use.

I append a statement of the number of barrels of apples shipped to London during the past eleven years, and it must be noted that during several of these years there were large exports to Boston and New York, of the quantities of which I have no data, but it has reduced the sum of the exports to London very materially during those years, as may be seen from the list.

Table of shipments of apples from Halifax to London for past ten years:

	Barrels.
Season 1886–87	113,000
" 1887–88	57,000
" 1888–89	102,000
" 1889–90	120,000
" 1890–91	92,199
" 1891–92	83,756
" 1892–93	117,536
" 1893–94	36,127
" 1894–95	252,122
" 1895–96	140,479
" 1896–97	367,173

In addition to this, there were exported during the past season to

	Barrels.
Liverpool	10,000
Manchester	6,000
Glasgow	8,000
Making a total of	391,173

Pears are a profitable crop for the orchardist when the markets are not overstocked, as they grow and bear well and are less troubled with insects and fungous diseases than any other of the tree fruits. Some varieties, as

Flemish Beauty, are liable to black spot and crack, but full rations of potash and phosphoric acid, with careful spraying with "Bordeaux Mixture" have in several instances changed complete failures into good crops of perfect fruit.

If we can succeed in sending our pears to London in cold storage in good order, there will be a large quantity planted in the near future.

This year pears are a full crop and so far the quality promises to be first rate.

Plums.—There has been a great increase in the planting of plums during the last six or seven years and last year the markets were very much overstocked owing to the tremendous crops.

This year the crop will be light and everything in that line will be in demand. We have been planting too many of the coarse, hardy sorts, as Moore Arctic and Lombard, but better varieties are now being planted, as it is found that almost all the best English and French sorts will succeed better than the American varieties, except it may be the Japanese type, of which several are promising, especially "Abundance" and "Burbank."

Peaches were formerly grown in gardens as espaliers on walls, but of late, early, hardy market sorts have proved quite successful with orchard culture and we have had four consecutive years of good crops, until this year, which is an almost total failure.

We ascribe this in a great measure to the wet, warm weather of last fall, which prevented the wood and buds from ripening and hardening as well as usual, also to some untimely frosts at the blossoming period in the spring.

We have not yet seen any symptoms of yellows, but we have some of the leaf-curl and also some rot on the fruit. Spraying with Bordeaux lessens the rot, but does not seem to cure, but may lessen the curl.

Cherries are usually a reliable crop. All varieties are grown. Dukes, Morellos and Bigarreaus, seem equally successful in ordinary years; but as with all our summer fruits the market is limited, so there are but few large plantings of cherries, most fruit growers contenting themselves with from six to twelve trees to provide for their own use and dispose of the remainder in the nearest market.

This year the crop is a failure, only a few of the late blossoming varieties giving any fruit, and those very scattering.

Small fruits of all sorts are successfully grown and in sufficient quantities to supply our local markets with strawberries, raspberries, etc. Blackberries grow wild in great abundance and form an article of export to Boston from several portions of the Province.

Cranberries grow wild in all parts of the Province where the location is suitable, and of late years the systematic cultivation of them has been undertaken to quite a large extent, so that the crop is making quite an item in our exports.

Last season the crop from a section of country about 20 miles long and not more than 1 to 1½ miles wide, containing a number of small bogs, which had been improved and planted from 4 to 12 years, gave an estimated quantity of 2,000 barrels, notwithstanding that an early frost spoiled large quantities of the fruit on several bogs. This year the reports from the same section of country say that the yield will be larger than ever before known.

A larger area has been prepared and planted during the past two seasons, and is still going on, so that in the small section of country spoken of there are over 200 acres planted, representing an expenditure of over $20,000;

but much of this is not yet in bearing, as it takes four years to get much, if any, return.

Varieties.—The most of our growers prefer the native varieties, selected from the wild growth on native bogs. There are many of these, the best are known as the Bell, Cherry, Neville and Early Purple. They are considered equal in quality to the best Cape Cod varieties and are more reliable, not being infested with the cranberry or fire worm, as it was not known here until imported in Cape Cod vines.

Grapes I have not mentioned, not because we do not grow them, but because we cannot grow them to compete with Ontario and other more favored sections of America. Our trouble is that our springs are so late that the vines blossom and set the fruit so late that there is not heat enough in the fall to properly ripen the fruit, unless we give wall protection, and girdle the vines to hasten maturity. This adds to the expense of production, and with grapes at from 2 to 3 cents per pound, leaves no margin for the grower.

FRUIT REPORTS

COMPILED AND PRESENTED

BY THE

CHAIRMAN OF THE GENERAL FRUIT COMMITTEE.

FRUIT REPORTS

FROM CHAIRMEN OF STATE FRUIT COMMITTEES. COMPILED AND PRESENTED BY THE CHAIRMAN OF THE GENERAL FRUIT COMMITTEE.

COPY OF CIRCULAR TO GENERAL FRUIT COMMITTEE.

My Dear Sir:—You have been appointed by this Society to the office of Chairman of the Fruit Committee for your State. The duties of the committee are as follows:

Extract from By-Laws: "State Fruit Committees of five members from each State, Territory and Province represented, and a general Chairman over all, shall be appointed biennially. It shall be the duty of the several State Fruit Committees to forward to the General Chairman one month before each biennial meeting, State pomological reports, to be condensed by him for publication."

It is customary for the State Chairman to select his associates, and you are respectfully requested to do so and organize your committee at once, selecting competent, trustworthy persons, who will represent the different sections of your State and aid you in collecting the information desired (on the several copies herewith inclosed), adding any other matter of importance to the pomological industry, and transmit the same to this office as early as August 1st next, so that this office may complete its report in time for the twenty-fifth biennial session, called to meet at Columbus, Ohio, September 1, 2 and 3, 1897.

The nature of the information asked for may be briefly stated as follows:

1. Species of Fruit.—What species of fruit are mostly planted and successfully grown in your State?

2. Varieties.—What varieties have proven most profitable? (Note: Please to classify as to season of ripening, early, mid-season, and late. Mark those worthy of general cultivation with one *; superior value, **; and those of more recent introduction and giving promise of excellence with a †. Committees in sub-tropical States will report such varieties as are best adapted to their region.)

3. New Varieties—What new seedlings of promise have originated in your State? (Note: A statement of their valuable points is desired.)

4. Sports—What new promising "Sports" have originated and are being grown in your State? What are their special merits?

5. Synonyms—What old varieties are being disseminated in your State under new or spurious names?

6. Difficulties Hindering Successful Results—What are the chief obstacles you have to overcome?

7. How do you overcome these difficulties?

8. Statistics—If convenient, show the extent and progress of fruit culture in your State, extent of recent planting, the largest orchards, varieties most extensively used, average price received for the various fruits and the estimated value of the total State production.

9. Culture and Pruning—What treatment of the soil for fruit tree plantations and what systems of pruning have yielded in general the best results?

10. Storing and Keeping Winter Fruits—What methods are most successfully practiced?

11. Packages—What sort of packages have been found most advantageous, especially for shipping to distant markets and particularly to Europe?

Notes: 1. Where State Committees have, heretofore, made full reports, you are not expected to repeat, but simply to note such changes in regard to value of varieties as later experience may justify, giving such *new* facts in regard to the general subject of fruits and their culture, keeping, marketing, etc., as may have come to notice since the last report.

2. This circular is sent out at this early date for the purpose of giving Committees ample time to organize and have the benefit of a full season's experience and observation in making up their report.

3. If you have not received a copy of the last volume of Transactions of the Society, you can procure it by addressing Geo. C. Brackett, *Secretary, Lawrence, Kansas.*

Personal to you: You are earnestly requested to give the subject presented in this circular your *close attention* throughout its entire scope, and report your observations and conclusions, based upon reliable facts, as affecting the best welfare of American Pomology.

Please to acknowledge promptly by postal card the receipt of this circular, stating your determination as to fulfilling the duties asked of you, in the interest of all lovers of fruit.

Very sincerely yours,

GEO. Y. JOHNSON,
Chairman of Gen. Fruit Com.

Lawrence, Kansas.

To the President of the American Pomological Society:

Sir—The making of a report of the General Fruit Committee has been delayed until the last moment, hoping that numerous reminders and solicitations would bring out a response from each and every State, Territory, Province or District covered by the American Pomological Society. Up to date, however, only about 50 per cent have responded.

In looking over the reports sent in by our correspondents, one is much impressed by the wide variance of conditions and of the readiness of our people to adapt themselves to their surroundings; of the many failures made, and yet, in most cases, the success crowning their endeavors to raise fruit.

It is the old story over again, i. e., "If the mountain will not come to Mahomet, then Mahomet will go to the mountain." So our people, if the country in which they make their homes will not produce the fruits they have been accustomed to, then they will use the fruits that the country will produce.

It has been tersely said by some of our horticultural forefathers that "Any country that will not produce fruit is not fit for the abode of man." Measured by this standard, most of the area covered by this Society is fit for man's abode. As shown by the fact that the States comprised within the bounds of "The Great American Desert," as laid down in our geographies of fifty years ago, or even of more recent date, are this year, by the aid of irrigation, producing enough apples—that king of fruits—for their own consumption and some yet to spare; while even far off Alaska revels in an abundance of delicious berries.

It had been the purpose of your Committee to have condensed all the reports into one, but the varying conditions of climate and soil presented obstacles making the effort impracticable. We are impressed by a few general facts, amongst which we might name that the general prevalence of insect enemies must teach us that "eternal vigilance" is the price of fruit, as well as of liberty. Again, that no locality can prescribe a line of action, either in selection of varieties or class of fruit for another locality, but that it stands as true today as it was 1800 years ago, that each must suffer the punishments or receive the rewards of their own acts, and that we must prove and "hold fast that which is good."

To those of us who, through influence of our old home surroundings, have, under new and varied circumstances, been over sanguine in a liberal planting of the fruits grown by our fathers, much consolation may be derived from a reading, either as written in the lines or "between the lines," of the failures of others pursuing the same course, as well as much encouragement in reading of their successes.

Feeling, as we say, that a general fruit report is at least impracticable, if not impossible, we beg to herewith submit the various reports received at this office from different correspondents, and ask their careful perusal by those interested, not doubting in the least that much interest and benefit may result thereby, as many of these reports contain much valuable information.

Very respectfully,

GEO. Y. JOHNSON,

Chairman General Fruit Committee.

Lawrence, Kans., Aug. 28, 1897.

STATE REPORTS.

ARIZONA.

BY H. W. ADAMS, CHAIRMAN, PHOENIX.

1. Species—Grape, apricot, peach, orange and lemon.

2. Varieties and Starring—Thompson Seedless grape**.

6. Difficulties—Shortage in water supply for irrigation.

8. Statistics—Most of the fruit in this State is grown in the Salt River valley. There is but very little being planted, owing to low prices for dried fruits in the East and also a shortage of water here in this valley. The largest orchards are of apricot.

9. Culture and Pruning—The best results from the apricot have been where they were pruned by little, in some cases not pruned at all.

CALIFORNIA.

BY PROF. CHAS. H. ALLEN, SAN JOSE.

Have found it difficult to get Committee together, the State is so large. Outside of citrous fruits, nuts and olives, plantings have not been large this year.

1. Species—All species of fruit, in some part of the State, including sub-tropical.

2. Varieties and Starring—All standard varieties are profitable.

3. New Varieties: Apple—Marshall Red, Sonoma, Skinner. Apricot—Eureka, Sparks Mammoth. Cherry—Centennial, Advance, Chapman. Peach—Muir, Phillips Cling, McDevitt Cling, McKevitt, Newhall, Nicholls Cling. Pear—P. Barry, Wilder, B. S. Fox. Plum—Tragedy, Clyman, Wickson, Hale, Juicy. Prune—Splendor, Giant.

4. Sports—The Isabella Regia is the only promising sort and that is fine.

5. Synonyms—Too many to name. Many old fruits are renamed to sell fruit under new names; not much nursery stock.

6. Difficulties—Distance from great markets; cost of labor; insect pests.

7. How Overcome—First, insurmountable; second, is gradually adjusting itself; third, intelligent co-operation in fighting them.

8. Statistics—Trees in bearing in California, 1896: Apple, 1,150,000; apricot, 3,200,000; cherry, 900,000; fig, 300,000; olive, 1,200,000; peach, 6,250,000; pear, 1,175,000; plum, 975,000; prune, 7,800,000; lemon, 1,300,000; orange, 3,700,000; almond, 1,750,000; walnut, 600,000.

CONNECTICUT.

BY T. S. GOLD, CHAIRMAN, WEST CORNWALL.

The Committee consisted of Messrs. N. S. Platt, Edwin Hoyt, A. G. Gulley, W. E. Britton, R. S. Hinman, J. H. Hale.

All the common tree and small fruits succeed in Connecticut under skillful culture.

Apples in 1896 met an over-full market and returned little profit to the grower, even many orchards were ungathered.

The Baldwin and Greening remain our standard varieties. The Sutton Beauty is gaining favor, as both quality and beauty commend it.

Pears have suffered from various pests, crowded markets, etc.

Peaches, so abundant 75 years ago, were almost exterminated by the yellows. New orchards have been planted during the last twenty years, and a fight with the yellows, both by individual orchardists and by State authority, has rendered it possible again to enjoy this most delicious fruit. Unfortunately, while success was in sight, all State aid and authority has been abandoned and painstaking and intelligent peach growers cannot have protection outside of their own orchards. It is hoped that the education of the last four years under the peach yellows law will not be discarded, but that this most promising branch of fruit culture in the State may still realize the expectations of its most ardent advocates. Connecticut soil and climate are highly favorable to the peach. The peach here attains a beauty and flavor not surpassed anywhere, and the average of successful crops is equal to that of the so-called favorite localities. The crop was small last year from the untimely cold of the previous winter; indeed, it was the nearest a total failure experienced in many years. The prospect still remains good for this year, notwithstanding the excessive rainfall. The Elberta stands in the front rank as to beauty and quality.

Mr. N. S. Platt, of Cheshire, writes about the Orange Quince, and my own observation agrees with his report.

"The quince which is propagated largely and sold under the name 'Apple' or 'Orange' proves inferior and undesirable in Southern Connecticut. The fruit ripens too early, rots and cracks, and the foliage and fruit are subject to the quince leaf spot. I would recommend that the name of this quince be confined to 'Apple' quince, as being more appropriate on account of its flat shape and to avoid confusion, leaving the name 'Orange' for some other variety which, on account of its color, may have a better right to it. After twenty years of fruiting quinces, I have come to the conclusion that the best strains of the old Pear quince are most desirable for Southern Connecticut on account of health of foliage, productiveness, clearness of skin, flavor and time of ripening."

Spraying with Bordeaux has proved a most effectual remedy for this fungous disease of the quince, as well as for all fungous diseases of the apple, pear, grape, etc.

Japan plums in variety have been planted to some extent and this year promises an enormous yield. To prevent the trees from breaking down and to secure fully developed fruit, thinning has been a necessity.

For the curculio, which has begun its work, I used an old remedy with success, a drench mode of barnyard drainings, 1 bbl., 1 quart of salt, 21 lbs. of sulphur, when ready to apply add water according to strength and add two quarts of wood ashes to a pailful. Apply with a hand washbasin. One or two applications will protect any crop of plums. Burbank's "Giant Prune" plum promises to be very large, very productive and an early bearer. The same can be said of Grand Duke plum. The Hale promises to sustain its high claim as the best of the Japan plums.

DISTRICT OF COLUMBIA.

BY WM. A. TAYLOR, CHAIRMAN, WASHINGTON.

1. Species—There is but little systematic effort in fruit culture in the District of Columbia at the present time. The few small commercial plantings are mostly confined to small fruits, principally strawberries, blackberries, red and black raspberries, with a few currants and gooseberries. A few grapes are grown, and these, with occasional peach, apple, pear, plum, cherry, quince, fig, Japanese persimmon, Persian walnut, Japanese chestnut and pecan trees, complete the list of species planted and grown for their fruit.

Most of the old time gardens and orchards which before the war contained considerable collections of fruit trees, have been destroyed to make way for new streets or buildings, and the fruit tree planting of the past 25 years has been mainly restricted to such species and varieties as could be placed in the back yards of city houses. The grading of the city streets has necessitated changes of level in the land surfaces, and as most of the grading has been done without reference to the future use of the soil for horticultural purposes, the man who plants trees has first to provide the soil in which to plant.

The conditions noted, make the behavior of varieties very variable and the determination of their relative merit exceedingly difficult.

2. Varieties and Starring: Apples—Ben Davis**, Bonum**, Early Harvest**, Early Margaret**, Fallawater*, Fall Pippin**, Gilpin*, Golden Sweet**, Gravenstein**, Grimes Golden*, Hoover**, Lady*, Limbertwig*, Maiden Blush**, Milam**, Nickajack*, Oldenburg**, Ortley*, Porter*, Pumpkin Sweet*, Rambo*, Red Astrachan**, Smith Cider**, Smokehouse**, Summer Rose**, Sweet Bough*, Tompkins King*, Wealthy**, Wine**, Winesap**, Yellow Bellefleur**, Yellow Transparent*, York Imperial**. Crabs—Red Siberian**, Yellow Siberian**. Apricots—Early Golden*, Moorpark*, Peach*. Blackberries—Early Harvest**, Erie**, Wilson**. Cherries, *Heart* and *Bigarreau*—Black Tartarian**, Early Purple**; *Duke* and *Morello*—Carnation**, Early Richmond**, May Duke**, English Morello**. Currants—Fay**, Red Dutch**, Versaillaise**, Victoria**, White Dutch**, White Grape*, Wilder**. Figs—Black Ischia**, Brown Turkey**, Brunswick**, Negro Largo*. Gooseberries—Downing**, Houghton**, Industry**, Triumph**. Grapes—Agawam*, Berckmans*, Brighton*, Catawba**, Clinton*, Concord**, Delaware**, Duchess*, Early Victor*, Eaton*, Herbemont*, Jefferson*, Lenoir*, Lindley*, Moore Early*, Moore Diamond**, Niagara**, Norton (Virginia)*, Palmetto†, Salem**, Vergennes**, Wilder*, Worden*, Winchell (Green Mountain)**, Kaki, Watt**. Peaches—Crawford Early*, Crawford Late*, Elberta*, Heath Cling**, Large Early York*, Levy Late**, Mountain Rose**, Oldmixon Free**, Red Cheek Melocoton*, Reeves Favorite**, Rivers**, St. John*, Salway**, Smock*, Stump (the World)**. Pears—Angouleme**, Anjou**, Bartlett**, Baronne de Mello*, Bosc*, Boussock**, Clairgeau**, Clapp Favorite*, Diel*, English Jargonelle*, Giffard**, Gray Doyenne*, Howell*, Kieffer**, Lawrence**, Le Conte*, Louise Bonne (de Jersey)**, Josephine (de Malines)*, Manning Elizabeth**, Oswego**, St. Michael Archangel*, Seckel**, Summer Doyenne*, Tyson**, Washington*. Plums,

P. domestica—Damson*, Lombard**, Shropshire Damson**; *P. triflora*—Abundance**, Ogon*, Satsuma*. Quince—Champion*, Chinese*, Orange**. Raspberries, *R. neglectus*—Shaffer**; *R. occidentalis*—Doolittle**, Gregg*; *R. strigosus*—Cuthbert**, Golden Queen**, Marlboro*, Turner**. Strawberries—Bederwood*, Bubach (No. 5)**, Crescent**, Downing*, Gandy**, Haverland*, Lady Thompson*, Michel**, Parker Earle*, Sharpless*, Warfield*, Wilson*.

3. New Varieties—Artz and Berry peaches, Bloomfield apple, Americus blackberry. (For descriptions see report of General Fruit Committee pp. 26, 45, 49.) The seedling peach described by the Committee on New Fruits in 1891 (Proc. 1891, p. 159) has been named Robena.

6. Difficulties—The chief obstacles to successful fruit culture in the District of Columbia are apparently: 1. Poverty of soil; 2. Prevalence of injurious insects and fungous diseases.

7. How Overcome—These obstacles have been overcome in a few instances by thorough fertilizing and careful cultivation, in connection with the use of various insecticides and fungicides applied in the form of sprays.

8. Storing Winter Fruits—Artificial cold storage is extensively practiced by dealers who purchase in large lots and hold for a rise in price. Apples are most largely stored for sale in late winter and spring. Grapes are held for a few weeks, but local experience has not been favorable to their storage in large quantities in the establishments now in use here. Chestnuts have been kept in perfect eating condition until late in spring by storing at 15 degrees F.

GEORGIA.

BY G. H. MILLER, CHAIRMAN, ROME.

Mr. Geo. Y. Johnson, Chairman General Fruit Committee:

Dear Sir—We inclose you report of the Fruit Committee of Georgia. We have had difficulty in securing responses from the members of our Committee in different sections of our State, but we have at last secured reports which cover our different fruit sections. On account of the vast difference which the climatic influence of the several sections of our State has upon the same fruits cultivated upon the mountains or near the coast, it is not possible to embody in one report statements that would faithfully represent the different sections. For that reason we think, and the members of our Committee think it best to send a sectional report. The southern section of our State, below the 34th degree of latitude, is represented by Mr. J. B. Wight, of Cairo. The great middle portion of our State, between the 32d and 34th degrees of latitude, is presented by Mr. L. A. Berckmans and Mr. H. N. Starnes. The upper and mountain region, embracing the section north of the 35th degree of latidude N., is included in our individual report. We also mail you a copy of the last report of our State Horticultural Society, which gives the catalogue of fruits as approved by that Society. We are sorry that our report appears in such a crude way, but owing to the facts that we have stated above, we think it is the best report that we could make, as we could not incorporate in any one report what would be necessary to do justice to the different sections.

Respectfully,

G. H. MILLER.

Rome, Ga., July 9, 1897.

MOUNTAIN REGION, NORTH OF 35° N. LATITUDE.

BY G. H. MILLER, ROME.

1. Species—Peaches, apples, pears, plums (Japan), grapes, strawberries and blackberries.

2. Varieties: Peaches—Sneed (V. E.**), Alexander (E.**), Mt. Rose (M.**), Lady Ingold (M.**), Elberta (M.**), Stump (M.**), Oldmixon Free and Cling (M.**), Triumph (E.**), Emma (L.**), Heath Cling (L.**), Stinson (L.**). Apples—Yellow Transparent, E. Harvest, Red June, Astrachan (E.**), Horse, Buckingham, Maiden Blush, Fall Pippin (Fall**), Ben Davis, Mammoth Black Twig, Winesap, Arkansas Black, Rome Beauty, Romanite, Heslep, Yates (Winter**). Pears—Kieffer (Fall**), Bartlett (Sum.**), Howell (Sum.**), Angouleme (Fall**), Lawrence (Win.**), Seckel (Sum.**), Anjou (Fall**). Plums—Abundance (E. Sum.**), Burbank (M.**), Chabot (L.**), Berckmans (E.*), Wild Goose (E.**), Damson (L.*). Grapes—Brighton (E.**), Concord (M.**), Delaware (E.**), Ives (M.**), Moore Early (E.*), Moore Diamond (E.*), Niagara (M.**), Scuppernong (L.*). Strawberries—Michel (V. E.**), Lady Thompson (E.**), Bubach (M.**), Haverland (M.**), Sharpless (M.*), Wilson (M.*), Gandy (L.*). Blackberry—E. Harvest and Wilson (E.**). Raspberries do not succeed very well—Cuthbert the best.

MIDDLE GEORGIA.

BY L. A. BERCKMANS, AUGUSTA

1. Species—Peaches, plums (Japan), oriental pears, grapes, strawberries, blackberries, apples, pecans.

2. Varieties—See annexed fruit catalogue of Georgia State Horticultural Society.

3. Triumph, earliest yellow, free; Emma, very large, excellent shipper; Plant Cling, very large; Everbearing, ripens from July to September; Mathews, ripens in August, large.

6. Difficulties—Blight in pears, curculio and rot in peaches and plums, mildew and black rot in grapes, spring frosts.

7. How Overcome—For blight, cut off and burn all affected parts, spray with Bordeaux mixture; curculio, jar trees and catch in hoppers. Rot in peaches and plums, spray with Bordeaux mixture before buds swell; repeat until fruit is nearly full size. Mildew and black rot in grapes, copper sulphate and Bordeaux mixture as sprays. Spring frosts, smudge when possible.

8. Statistics—No accurate statistics as to orchards can be secured. Orchard planting largely on the increase. Prices of fruit and extent of crops very variable. 1,600 cars of fruit shipped from Georgia in 1895. Largest orchard area in Southwestern Georgia. Peaches—Alexander, Sneed, St. John, Triumph, Mt. Rose, the Crawfords, Elberta, Thurber, Emma, Tillotson, Stump, Chinese Cling, Reeves. Pears—Garber, LeConte, Kieffer, Bartlett, Lawrence, Angouleme. Plums, Native—Wild Goose; Japanese—Abundance, Burbank, Berckmans, Red Nagate, Satsuma. Apples—Astrachan, Red June, Red Margaret, Bonum, Buncombe, Carter Blue, Shockley, Ben Davis. Grapes—Brighton, Niagara, Catawba, Concord, Delaware, Di-

ana, Moore Diamond, Ives. Strawberries—Hoffman, Michel, Sharpless, Wilson, Lady Thompson, Bubach. Blackberries—Wilson, Harvest, Minnewaska. Raspberries—Cuthbert, Golden Queen, Shaffer.

9. Culture and Pruning—Clean and thorough cultivation for all fruits. Fertilizers, bone and potash. Peaches and plums, one-third of previous year's growth removed; pears and apples, less; grapes, according to system of training.

MIDDLE GEORGIA—WESTERN DIVISION.

BY H. N. STARNES, EXPERIMENT.

G. H. Miller, Esq., Rome, Ga.:

Dear Sir—As requested, I hand you herewith report, as far as I have had time to make it, for this section of Georgia, comprising in a general way those counties north of a line from Columbus through Macon, south of the Chattahoochee and west of the Oconee. The answers are numbered to correspond with those on the circular.

1. Species—Peaches, grapes, Japan plums, apples, melons and small fruits generally, with the exception of gooseberries and currants.

2. Varieties: Grapes—Presly (V. E.†), Moore Early (E.*), Delaware (E.*), E. Ohio (E.†), Ives (E.**), Niagara (M.**), Concord (M.**), Carman (L.†). Peaches—Sneed (V. E.*), Alexander (V. E.**), Triumph (E.*), Crawford Early (E.*), Mountain Rose (E.*), Elberta (M.**), White Heath (L.*). Apples—E. Harvest (E.*), Red June (E.*), Yates (Winter**), Shockley (Winter**), Terry (Winter**). Japan Plums—Red June (V. E.**), Abundance (E.**), Burbank (M.*), Hatankio (L.*), Chabot (V. L.*), also Normand (M.†) and Yeddo (M.†). Strawberries—Hoffman (V. E.**), Lady Thompson (E.**), Sharpless (E.**), Brandywine (M.**), Haverland (L.**). Raspberries—Cuthbert*, Loudon*, Golden Queen*.

3. New Varieties: Terry Apple—(This may have been reported to your Society before)—Its points are its extreme productiveness, and its capacity to keep like cobblestones. Only drawback is its small size, as its quality is decidedly good. Stanley and Georgia Triumph Strawberries. Former is a Wilson seedling and is like its parent in every respect except that it is doubly as productive. The latter, Georgia Triumph, is the earliest berry we have here. See Bulletin 32 of Georgia Experimental Station for full description.

5. Synonyms—Too tedious a task to attempt in the short time at my disposal. Japan plums appear to be hopelessly tangled, and will remain so until some one with the necessary authority can take the time to untangle them. The collection of the Georgia Experimental Station, consisting of 44 (so-called) varieties, many of them new importations, is at the disposal of any committee for examination and study next year.

6. Difficulties—1. Low prices. 2. Extortionate transportation charges. 3. Unreliable middlemen. 4. Curculio, injuring peaches and plums. 5. Various fungous affections—*Monilia* with peaches and plums and the various grape rots, the worst of which is anthracnose—others can be measurably controlled.

7. Remedial Methods—Spraying, mainly with Bordeaux mixture, practically controls all fungous affections of the grape except anthracnose. Peaches are little sprayed here for *Monilia* and it is sometimes quite troublesome. Jarring is generally attempted in commercial orchards against cur-

culio, but is only partially effective, owing to the numerous wild plum hedges and patches. No way has yet been devised of circumventing the transportation lines and commission men. Selling on the tree is best, and sometimes done; next to that we have found it best to send a reliable man along with every few carloads.

Have not time to discuss 8, 9 and 10. Refer you to Bulletins 28, 32 and 33 of the Georgia Experimental Station.

SOUTH GEORGIA—SOUTH OF 34° N. LATITUDE.

BY J. B. WIGHT, CAIRO.

1. Species—LeConte and Kieffer pears constitute the bulk of the fruit crop. Blight and poor prices causing discouragement as to these. Some commercial peach and Japan plum orchards being planted. Apples grown only for home consumption, and not enough for this purpose.

2. Varieties—LeConte pear (M.**), Kieffer pear (L.**), Alexander peach (E.**), Elberta peach (M.*), Burbank plum (M.**). Many native seedling peaches and plums fruit fairly well.

3. New Varieties—The only one worthy of notice is a seedling of Elberta. Good points: As large and attractive in appearance as parent, while it is 10 to 14 days earlier; flavor fairly good; shipping qualities not yet tested; free stone; tree a vigorous grower; shape very much like Elberta.

6. Difficulties—Blight in pears. Bartlett and Smith very susceptible to it; curculio and rot in peaches and plums. For the most part these troubles have been allowed to take their course.

8. Statistics—More LeConte pears are grown in this (Thomas) county than in any other section of the country. I planted 3,000 trees last season, the largest planting I know in recent years. Few new orchards of pears being planted. Cannot give estimate of number of trees in bearing. 16,000 to 20,000 barrels of pears shipped from this county last year and there will be more this year. Few peaches and plums are shipped from extreme South Georgia. About 16,000 commercial peach trees near here and 3,500 plum trees.

9. Culture and Pruning—Thorough cultivation, with liberal applications of phosphoric acid and potash. No system of pruning beyond cutting off dead and broken limbs, and generally not even this. I might have mentioned that at Meigs, 15 miles north of here, the growing of grapes for market is attracting considerable attention. Results so far have been good. The Scuppernong is our standard grape for home use, but it is not shipped. It never fails of a crop. Pecan culture is being tried to some extent. About 150 acres near here, of which I have 100 acres. Few trees in bearing yet, most of the trees being from one to five years old.

ILLINOIS.

BY E. A. RIEHL, CHAIRMAN, ALTON.

Mr. Geo. Y. Johnson, Chairman:

Dear Sir—As soon as I received your communication regarding fruit report, I sent letters to gentlemen in the three fruit districts into which our State is divided, whom I knew to be able to make such reports. They have done so and I forward them to you, with some notes of my own.

SOUTHWESTERN ILLINOIS.

BY E. A. RIEHL, ALTON.

1. Species—Apple, pear, peach, plum, cherry, grape and all the small fruits.

2. Varieties: Apple—Ben Davis*, Willow*, Grimes Golden**, Jonathan**, Minkler*. Pear—Bartlett*, Howell*, Anjou*, Kieffer*, Sheldon*, Seckel*.

3. New Varieties—Akin, an apple of excellent quality, very handsome and a good keeper.

4. Sports: Grapes—Hero is a sport of Concord, same color, but about twice as large.

6. Difficulties—Over-production and shipment of low grade fruit; not over-production of good fruit. The careless fruit grower is his own worst enemy.

7. How do you overcome these difficulties? Give good cultivation, prune thoroughly, thin severely, and keep the culls at home, if there are any.

9. Culture and Pruning—For orchards, plow in spring, sow to cow peas and let grow until fall, then turn on hogs. This has been the cheapest and best method for all orchards, except pears, which should be in grass after they come into bearing.

10. Storing and Keeping Winter Fruits—Cold storage for fancy stock and early sales for everything else.

SOUTHERN ILLINOIS.

BY G. W. ENDICOTT, VILLA RIDGE.

1. Species—Apples, pears, peaches, grapes.

2. Apples, early—Benoni*, Sops of Wine*, Red June*, Yellow Transparent†, Stribling†, Fanny†; medium—Maiden Blush*, Mother*, Wealthy†; late—Winesap*, Rome Beauty*, Ben Davis*, Black Twig†, Ingram†, Clayton†. Pears, early—Bloodgood*, Clapp Favorite*, Koonce†; medium—Bartlett*, Howell*, Seckel*, Lincoln†; late—Kieffer*, Garber*. Peaches, early—Sneed*, Minnie*, Amelia†, May Beauty*; medium—Ede**, Elberta**, Thurber*, Oldmixon Cling*; late—Ringgold Cling*, Heath Cling*.

They all *rot* more or less with me. In fact, I have gone out of the peach business on account of the *rot*.

In grapes we have Concord, Ives, Wilder, Cottage, Salem, Goethe, Massasoit and Lindley for general use, with Brighton, Empire State, Delaware for amateur, and Early Ohio, Champion, Janesville, all in one class and that the poorest to be found. This latter class we use to fool the boys with, and we generally get it in the neck when the better fruit comes on the market.

3. New Varieties—Of apples I only recall one, the Hess, grown at Anna, Ills., that is worthy of consideration. In pears, we have the Koonce, early, and a No. 1 tree as a standard. Holds its foliage well, blooms late and escapes frost better than most others. Its parentage is Early Harvest and Flemish Beauty, as near as I can find out.

5. Synonyms—Lawyer is sent out as Delaware Winter and the old Early Sugar Loaf as Sherwood Favorite and Cornell Fancy.

6. Difficulties—In apples, the codling moth and scab fungus; in peaches, rot and curculio; in pears, blight and root rot.

7. In apples we overcome the scab fungus with Bordeaux mixture in connection with Paris green, which we use for the codling moth, and it is very successful if applied two or three times in early spring. The first spraying should be very early, before buds open. It is not necessary to use any "green" in the first spraying. For codling moth we use Bordeaux and "green." It is a sure remedy for the early fruit, but the second brood of codling moth cannot be caught in this way, and they ruin many of our apples. On peaches we use a sheet and mallet for curculio and succeed with them, but the rot baffles all remedies yet. No spray has ever had any good results with me. On pears, no remedy has been found to practically overcome blight or root rot. The nearest remedy is to plant kinds that are least subject to the disease.

9. Culture and Pruning—A thorough plowing and subsoiling before planting, with oft repeated shallow culture all the season, and seeding to rye in early fall, to be turned under in spring. Start the head of tree right when it is young and no excessive pruning will ever be necessary.

11. The Climax one-half bushel basket has been the best thing we have found for early apples this year, also for pears.

EASTERN ILLINOIS.

BY H. M. DUNLAP, SAVOY.

1. Species—Apples, pears, peaches, grapes, cherries, currants, gooseberries, plums, strawberries and other small fruits, and to some extent persimmons, quinces and apricots.

2. Varieties: Apples—I append list of fruits recommended by State and District Horticultural Societies, which is about as correct as can be stated.

3. New Varieties—The Lincoln and Sudduth pears, Prairie State grape and Ruby strawberry.

5. Synonyms—The Lawyer apple as Delaware Red Winter.

6. Difficulties—Changeable temperature, dry summers, fungous diseases, especially of the foliage, and insect enemies, notably the codling moth, tree borers, etc.

7. How Overcome—Temperature we cannot change; cultivation, mulching, manures and good land for dry summers; thrifty plants and Bordeaux mixture for fungous diseases; spraying, etc., for insect enemies.

8. Statistics—Apple tree plantings largely increased during past eight years. Planting of new orchards has received a check and increase now much slower. Largest orchards run from 200 to 400 acres, mostly in south half of State. Orchards of this size (200 acres) are quite common; varieties largely Ben Davis, Willow, Jonathan, Winesap, Grimes Golden, in the order named.

9. Culture and Pruning—Cultivation of corn in the orchards while young is probably the best method and most commonly practiced. Sufficient pruning to keep the tree well balanced while young, with very little pruning afterward.

10. Storing and Keeping Winter Fruits—Cool storage in well ventilated cellars or frost proof fruit houses, with occasional cold storage establishments scattered through the south half of the State. The latter are increasing in number and will be quite generally used. I predict that these will be put up on the mutual plan, similar to that used in establishing creameries.

11. Packages—Barrels of three bushels capacity for long shipments are undoubtedly best. For Chicago markets a bushel box is used for fancy fruit.

NORTHWESTERN ILLINOIS.

BY J. V. COTTA, NURSERY, CARROLL COUNTY.

1. Species of Fruit—Apples, crabs, pears, plums, cherries, grapes, raspberries, blackberries, currants, gooseberries and strawberries.

2. Varieties: Apples—Yellow Transparent*, Oldenburg (E.**), Benoni*, Lowell (E.*), Trenton (E.*), Maiden Blush (M.*), Wealthy (M.*), Fall Orange (M.*), Longfield (M.*), Fameuse, *Snow* (M.*), Wolf River (M.*), Patten Greening (M.†), Jonathan (L.*), Pewaukee (L.*), Grimes Golden (L.*), Roman Stem (L.*), Ben Davis (L.*), Minkler (L.*), Wythe (L.*), Willow Twig (L.*), Salome†, Malinda (L.†), Milwaukee (L.†), Northwestern Greening (L.†). Crabs—Whitney (E.*), Brier Sweet (M.*), Beecher Red (M.†), Hyslop (M.). Pears—Bartlett (E.*), Flemish Beauty (M.*), Seckel (M.*), Kieffer (M.*), Koonce (E.†), Du Pont (M.†), Best Favorite (M.†), Leipsic (M.†). Plums—DeSoto (M.*), Pottawattamie (M.*), Robinson (M.*), Hawkeye (M.*), Rockford (M.*), Wolf (M.*), Miner (L.*), Lombard (M.*). Cherries—Early Richmond (E.*), Montgomery (M.*). Grapes—Moore Early (E.), Worden (E.*), Concord (M.**), Niagara (M.*), Pocklington (M.*), Brighton (M.*). Raspberries, black—Eureka (E.*), Ohio (M.*), Older (M.*), Gregg (L.*); red—Turner (E.*), Cuthbert (M. and L.*), Loudon (E., M. and L.**); purple—Shaffer (M.*), Columbian (M. and L.**). Blackberries—Barnard (E.*), Snyder (M.*), Ancient Briton (M. and L.**). Currants—Red Dutch (M.*), Victoria (M.*), (*Long Bunched*) Holland (L.*). Gooseberries—Houghton*, Downing*, Red Jacket (L.†). Strawberries—P. Crescent**, P. Bubach*, P. Warfield*, P. Pacific*, Dayton*, Splendid*, Bederwood*.

6. Difficulties—Apples and pears suffer considerably from scab and blight; also from curculio, codling moth and canker worm; also from severe freezing in cold winters. Plums suffer from curculio; grapes from downy mildew and black rot; raspberries from rust and severe cold; blackberries from cold; currants and gooseberries from currant worm.

7. Fungous diseases are held in check by spraying with Bordeaux mixture; curculio by jarring and catching upon sheets; other noxious insects by spraying with Paris green, London purple, or arsenic; currant worms by dusting with white hellebore. Propagating apples and pears by top grafting (double-working) desirable varieties on perfectly hardy, congenial stock trees grown for that purpose, has proved a safeguard against winter killing. Berry fruit bushes liable to injury by cold are laid down and covered with ground over winter.

9. Culture and Pruning—Frequent, clean, but shallow cultivation up to the end of July has given best results in all fruit plantations.

INDIANA.

BY JAS. TROOP, CHAIRMAN, LAFAYETTE.

1. Species—Apples, pears, peaches, plums, quinces, currants, gooseberries, grapes, blackberries, raspberries, strawberries. Of the wild fruits, persimmon and papaw are cultivated to some extent.

2. Varieties: Apples, summer—Red Astrachan*, Summer Queen*, Early Harvest*, Chenango*, Sweet Bough*, Red June*, Duchess of Oldenburg*, Red Stripe*, Benoni**, Trenton Early*, Tetofsky*, Golden Sweet*, Sweet June*, Yellow Transparent**; autumn—Maiden Blush**, Wealthy**, Rambo*, Tolman Sweet*, Fall Pippin*, Vandervere Pippin*, Jefferis*, Keswick Codlin*, Fameuse*, Fall Wine*, Alexander*, Holland Pippin*, Sops of Wine*, Bailey Sweet*, Moore Sweet*, Fall Orange*, Porter*, Gravenstein*, Flory*, Sweet Russet** (for north part); winter—Ben Davis**, Rome Beauty**, Winesap**, Grimes Golden**, Willow Twig*, Baldwin (north), R. I. Greening (north), Fallawater* (*Tulpehocken*), Northern Spy, Limber Twig*, Mammoth Black Twig†, Arkansas Black†, Wolf River†, North Western Greening†, Smith Cider*, McAfee*, Milam*, Indiana Favorite*, Pewaukee*, Greenville*, Salome†, Jersey Black*, Golden Russet*, Genet**, Jonathan**, Lansingburg (long keeper)*, Wagener*, Peck Pleasant*, King*, White Pippin*, Lawver*, Clayton, Romanite*, Stark*, York Imperial†, Minkler*, Roman Stem*, Mann*. Crabs—Red Siberian*, Yellow Siberian*, Whitney**, Hyslop*, Transcendent*, Florence*, Martha**, Gibb*, Kentucky Red Cider*. Pears—Bartlett*, Lawrence*, Kieffer*, Clapp Favorite*, Seckel*, Flemish Beauty*, White Doyenne*, Angouleme*, Anjou*, Louise Bonne*, Howell*, Wilder*, Koonce†, Sheldon*, LeConte*, Garber†, Tyson, Arnold†, Vermont Beauty†, Belle Lucrative*. Peaches—Early Crawford*, Late Crawford*, Amsden*, Heath Cling*, Alexander*, Wager*, Wheatland*, Salway*, Shumaker*, Waterloo*, Oldmixon Free*, Troth, Elberta†, Ellison*, Mt. Rose†, Champion†, Early Rivers*, Salway*, Barnard*, Crosby†, Stump*, Kilborne*, Smock*, Golden Drop†, Kalamazoo†, Beatrice*, Foster*, Snow Orange*, Hills Chili*, Prolific†. Plums—Robinson*, Weaver*, Wild Goose*, Damson*, Forest Rose*, Desoto*, Wolf*, Newman**, Red June†, Wickson†, Green Gage*, Lombard*, Shipper Pride*, Shropshire Damson*, Yellow Egg*, Moore Arctic*, Lincoln†, Imperial Gage*, Abundance*, Burbank**, Ogon*. Cherries—Early Richmond**, Montmorency**, Olivet*, English Morello*, May Duke*, Ox Heart*, Dyehouse*, Late Morello*. Quinces—Missouri Mammoth*, Orange*, Meech Prolific*, Champion*. Currants—Pomona†, Wilder*, Victoria*, White Grape*, Moore Ruby*, Red Dutch*, Fay*. Gooseberries—Champion**, Downing*, Houghton*, Pearl†, Industry*. Grapes—Delaware*, Brighton**, Moore Early*, Concord*, Niagara*, Pocklington*, Worden*, Diamond**, Woodruff Red*, Salem*, Brilliant†, Cottage*, Early Victor*, Green Mountain†, Jefferson*, Lindley*, Vergennes*, Martha*, Nectar*, Moyer*, Agawam*, Early Ohio†, Ives*. Blackberries—Early Harvest** (South), Snyder**, Taylor*, Erie*, Lawton*, Stone Hardy*, Minnewaska*, Wilson Jr.* (South), Ancient Briton*, Eldorado*, Kittatiny*, Western Triumph*, Agawam*. Raspberries, black—Gregg*, Palmer*, Ohio*, Souhegan*, Kansas**, Nemaha*, Mammoth Cluster*, Eureka**, Tyler*, Hilborn*, Conrath**, Cromwell†, Hopkins*; red—Cuthbert**, Turner*, Shaffer*, Marlboro*, Hansell*, Brandywine*, Miller†, Columbian†, Crimson Beauty*, Golden Queen*. Strawberries—Bederwood*, Haverland**, Wartield**, Bubach**, Crescent*, Lovett*, Brunette**, Greenville**, Cumberland*, Jessie*, Sharpless*, Gandy*, Brandywine†, Enhance*, Marshall†, Edgar Queen*, Downing*, Green Prolific*, Shuster*, Van Deman*, Clyde†, Parker Earle*, Mary†, Tennessee Prolific†, Eureka*.

1. New Varieties—The Elenor peach originated in Washington Co., and is by far the best canning peach grown there. A large white cling and an excellent shipper. The Buker strawberry originated in Noble Co.; perfect flower, good form and fine flavor.

5. Synonyms—The Elenor peach is often confused with White Heath.

6. Difficulties—Severe winters; late spring frosts; drouth; insects; fungous diseases; competition of Southern fruit.

7. How Overcome—The first is overcome in a measure by covering small fruits, and by stopping all cultivation early and allowing the wood to ripen thoroughly; drouth is overcome by constant cultivation; insects and fungous diseases by spraying; competition from the South is overcome in a large measure by selling to private consumers and avoiding the larger cities.

8. Statistics—In the southern counties the largest plantings of late have been of Kieffer pears and peaches. In the northern counties there has been a large increase in the acreage of small fruits, specially strawberries, of which Warfield, Haverland and Bubach are the leading varieties. Of raspberries, Gregg is the leading black variety and Cuthbert is the leading red. Snyder leads among blackberries. In the central portion more attention is given to small fruits and apples. The winters are too cold for peaches.

9. Culture and Pruning—The same fertilization and cultivation as would insure a good grain crop. As each kind of fruit requires different management, no "system" of pruning is adopted for all, but severe cutting back, heading low, as a rule, and thinning out.

10. Storing Winter Fruits—In large commercial orchards fruit is frequently sold on the tree, sometimes at auction. In smaller lots it is hauled to the nearest shipping point, or evaporated. Very little more than enough for home consumption is kept over winter. Cold storage is not practiced to any considerable extent, the fruit being kept in an ordinary cellar.

11. Packages—Barrels, baskets and bushel boxes are used in shipping apples. The bushel basket and the bushel box are used for peaches and pears. Grape growers use mostly the 8 and 10 pound basket. The Hallock quart box and 16 quart crate are the leading packages for strawberries, with the pint box for raspberries. Almost invariably shippers use the wine quart, while home growers use the full quart box. A great deal of deception is practiced in this way, and I earnestly wish that the A. P. S. could devise some means for doing away with the wine quart box, and all other short measures for that matter.

KENTUCKY.

BY J. M. SAMUELS, CHAIRMAN, CLINTON.

1. Species—Apple, peach, pear, plum, cherry, apricot, quince, grape, mulberry, serviceberry, currant, gooseberry, strawberry, raspberry, blackberry.

2. Varieties: Apple, summer—Early Harvest**, Yellow Transparent*, Coffman†, Summer Red**, Summer Queen**, Stribling†, Golden Sweet**; autumn—Horse*, Summer Pearmain**, Buckingham*, Maiden Blush, Grimes Golden; winter—Ben Davis**, Winesap**, Rome Beauty*, Kinnaird*, Picket*, Black Twig**, Red Russet*, Shockley, Lansingburg, Watwood, Lankford†, Arkansas Black**, Arkansas**, Harper**, Jones Seedling†, Paragon**, Shackleford†, Red (Beelers) Crab†. Peach, early—Sneed**, St. John*, Thurber*, Oldmixon Free**, Elberta**, Mountain Rose**, Amelia*, Early York*; medium—Switzerland*, Stump*, Wheatland, Burke†, Gudgeon*, Globe; late—Picquet Late*, Salway**, Heath Cling*, Wonderful*, Henrietta*. Pear, early—Early Harvest*; medium—Bartlett**, Seckel**, Howell*, Flem-

ish Beauty*, Clairgeau*, Angouleme**, Anjou*, Diel*, Beurre Easter*, Kieffer*. Plum—Wild Goose*, Rowlett*, Kelsey*, Abundance*, Botan*, Shropshire*. Cherry—Generally throughout the State, Dyehouse, May Cluster, Early Richmond, May Duke, Hortense, *Reine*, Early Purple, *Guigne*, Elton, Red Heart, Black Tartarian, Wood, *Governor;* the last six varieties succeed well only in the limestone region. Apricot—Victor**; other varieties bloom too early and are usually killed by spring frosts. Nectarines—The curculio always destroys the fruit. Quince—Orange*. Mulberry—Downing. Serviceberry (Juneberry)—Common. Grape—Brighton**, Champion*, Concord**, Delaware*, Ives*, Perkins*, Niagara*, Cottage*. Strawberry—Bubach**, Haverland**, Michel*, Crescent, Dauntless**, Gandy*, Sucker State*, Warfield*, Bederwood*, Cumberland*, Crockett Choice*. Raspberry—Cuthbert*, Gregg**, Ohio*, Mammoth Cluster*, Turner*. Blackberry—Snyder*, Wilson*, Lawton*. Gooseberry—Houghton*, Downing. Currant—Cherry, Fay Prolific*, Red Dutch.

3. New Varieties—I know of no fruits originating in this State which have not been catalogued for several years.

5. Synonyms—Gloria Mundi, under the name of Tennessee Mammoth.

6. Difficulties—Insect pests. The growers generally have not learned to combat them. Commercial orchard growers are discouraged on account of low prices. Prices have been greatly reduced and the railroads have increased their freight rates.

7. How to Overcome—By the dissemination of literature on spraying and other methods of destroying injurious insects and fungi; by the organization of fruit shipping associations to learn, at least expense, the best markets, and ship in carload lots; by combined effort of the fruit associations to induce railroads to lower their rates.

8. Statistics—No systematic plan has been adopted to learn the extent of fruit culture in the State. In the commercial centers the increase in the number of new orchards was very rapid until four years ago. Since that time the progress has been slow. Strawberry growing has received an impetus the present season on account of prices being higher than they have been for several years. Peaches and strawberries are the fruit crops grown mainly for commercial purposes. There are quite a number of peach orchards in the vicinity of Milton, Trimble County, Elizabethtown, Hardin County, and Brooks, Bullitt County, that are from 50 to 400 acres in extent. Near Columbus, Hickman County, there are many fields of strawberries of from 10 to 60 acres, a few larger. Apples average 50 cents per barrel; peaches 50 cents per bushel; strawberries $1.50 per 24 quart case.

9. Culture and Pruning—Thorough cultivation of young orchards of all fruits. Sodding of old pear and apple orchards. Low heads to shade trunks and as little cutting away as possible, to keep trees symmetrical and with branches not too crowded.

10. Storing and Keeping Winter Fruits—The primitive methods of storing in cellars under dwelling houses and, rarely, burying in mounds in the orchards. Louisville has a few cold storage houses. In seasons of plenty, apples have been sold to Chicago, Cincinnati and Cleveland dealers in the fall, and shipped back into the State at a highly advanced price in the spring.

11. Packages—Ben Davis, Rome Beauty and Willow apples have been shipped successfully in half-barrel packages to Liverpool and West Hartlepool, England. A Montreal, Canada, firm shipped all of their Kentucky

apples abroad in this kind of packages one season, and a member of the firm informed me that they brought the highest price.

Note: The central and eastern part of the State had no peach crop in 1895 and partial crops in 1896 and 1897. The western part of the State has had three full crops of peaches, with the result, in the latter section, for this season, of having very little perfect fruit. The successive crops have furnished an abundant amount of food for insect pests, and they have increased sufficiently to attack every specimen. These conditions will apply to the State at large for apples, pears, plums and cherries. Cold rains in the spring caused apples, pears and plums to drop, leaving no fruit on some trees and a quarter or half crop on others. Some varieties were not affected by the cold and are heavily laden, but invariably with small, insect infested fruit.

EASTERN KENTUCKY.

BY JAY H. NORTHUP, LOUISA.

1. Species—Apples, strawberries, raspberries, peaches and plums.

2. Varieties: Strawberries—Haverland, Greenville, Bubach, Gandy and Jessie. Plums—Wild Goose. Raspberries—Cuthbert. Apples—Early Harvest, Rome Beauty, Smith Cider.

6. Difficulties—Inattention on the part of our people.

7. How to Overcome—By watching for depredations by insects and spraying the different fruits and digging out borers, etc.

8. Statistics—But little attention has been paid of late to fruit culture in this section of the State. The only peach orchard of any size that has been put out has been my own, of about four thousand trees, which has a few peaches on this year and ought to have a good many next year, as it will be its third year.

9. Culture and Pruning—Peaches, cultivate until August and in the early spring cut back one-third new growth. Strawberries, matted row, not over two years old.

10. Storing and Keeping Winter Fruits—Burying in the ground; a few have built storage rooms on a small scale, and left air space and ventilation. Very little attention is paid to anything like systematic care.

CENTRAL KENTUCKY.

BY H. GARMAN, LEXINGTON.

1. Species—Strawberry, raspberry, currant, gooseberry, apple, pear, peach, plum (Wild Goose).

2. Varieties: Strawberries—Haverland*, Gandy*, Bubach**, May King*. Raspberries—Cuthbert*, Turner*, Gregg*, Mammoth Cluster*. Apple—Ben Davis**, Baldwin*, Bellflower* (a few), Early Harvest**, Maiden Blush*, Genet*, Winesap*. Grapes—Concord, Ives, Catawba, Delaware, Worden. Peach—Early, Alexander*, Hale Early*, Reeves*, Crawford* (early and late), White Heath*, George 4th**, Elberta? (recently introduced from South). Pear—Bartlett** chiefly.

6. Difficulties—Indifference; everybody interested in horses. Soil and climate well suited to fruit growing, especially to grapes, strawberries and peaches. Apples do not grow so well about Lexington, because cavernous

limestone beneath lets out the water so quickly that the roots suffer in August and September. Have seen good crops about Lexington rendered worthless by drouth.

9. Culture and Pruning—The summer sun is exceedingly hot, and our most successful growers prune so that the trunks are sheltered by leafage.

10. Storing and Keeping Winter Fruits—Arrangements very primitive. Apples stored in boxes and barrels in cellars usually; sometimes buried. Much of the fruit used in winter comes from north of the Ohio river.

Note: This is perhaps the poorest fruit section in the State. A good deal of what we use in the winter comes from the North, while in summer fruit is shipped here from the region about Elizabethtown. The scarcity of fruit is not due to difficulties in growing it, but to the fact that horse raising has been absorbing the energies and capital of our people. At present there is a revival of interest in crop growing, but it will be several years before results will be apparent.

LOUISIANA.

BY R. MAITRE, CHAIRMAN, NEW ORLEANS.

1. Species—Sweet orange and Mandarin oranges, figs, pears, peaches, Japan plums, some varieties of American grapes. The citrous fruits and figs are grown in South Louisiana; peaches, pears, Japan plums and grapes in North Louisiana.

2. Varieties—*Sweet Oranges in September and October to December. *Figs in May and June. Peaches, May, June and September. *Japan plums, June to August. Pears, June to October. Grapes, May to August. *Loquat, March and April. *Ziziphus sativus* (Lotus plum), June and July. Persimmons, September and October.

6. Difficulties—Cold and insects to the citrous family; blights from extreme heat to the deciduous fruit trees.

7. How Overcome—In planting wind breaks for exposed localities; spraying to remove and kill mildews, blights and insects.

8. Statistics—The culture of fruit trees in Louisiana has earnestly begun in the last ten or fifteen years. Plantations of 25, 50, 75, 100 and 125 acres of oranges are not uncommon from the city of New Orleans down to the mouth of the Mississippi, while the culture of figs, peaches, pears and Japan plums is confined to East, North and West Louisiana, formerly pine and other wood land. Grapes and strawberries are mostly confined to East Louisiana, in the former pine regions.

9. Culture and Pruning—The citrous species, fig and loquat require the sandy loams, as deposited by the river's alluvia. Persimmons and pears enjoy the same land. Plums, grapes and strawberries do better on sandy pine wood land. Pruning oranges amounts to mere ventilation; they are grown low, similar to all other fruit trees. Grapes are best pruned in October, November—in December it is too late, as the sap rises before Christmas in this section.

10. The cold storage only.

11. Packages—The usual small one-half bushel and bushel boxes, holding from 50 to 100 oranges. Other fruits are packed and shipped, here as elsewhere, in light, convenient packages. Figs, loquats and lotus are mostly used at local preserve factories; few are shipped.

MICHIGAN.

BY L. R. TAFT, CHAIRMAN, AGRICULTURAL COLLEGE.

1. Species—Apples, peaches, pears, plums, grapes, cherries, strawberries, raspberries, gooseberries, currants, blackberries and whortleberries.

2. Varieties—I send you Bulletin 106, which gives a much more complete list than I have room for here.

3. New Varieties—Conrath Black Cap, introduced by Greening Bros., Monroe; hardy, productive, good size and quality. Lewis, Early Michigan and Kalamazoo peaches; hardy and productive.

6. (1) Drouth; (2) peach yellows; (3) black knot; (4) insects; (5) fungi; (6) low prices; (7) cut worms.

7. How to Overcome—(1) Cultivation and irrigation; (2 and 3) cut out at once and burn; (4 and 5) spraying; (6) growing better fruit, neat and honest packing; (7) tying bands of wool around the tree.

8. Statistics—Comparatively little increase in acreage except in peaches and plums. Of the former from 2,000,000 to 3,000,000 trees have been set annually for past three years. Last year peaches averaged 75c per bushel; pears and plums, 75c to $1.00; apples, 45c per barrel in orchard; grapes, 1c per pound net. The grape crop last year was 40,000,000 pounds; peaches, 20,000,000 (10 pound) baskets.

9. Culture and Pruning—Clover sod to turn under before planting; crop with corn, late potatoes, melons or squashes for a year or two, then clean culture, with shallow plowing in spring and working every week or ten days with Spring Tooth, Acme or other harrows up to the first of August. Rye, oats and crimson clover for cover crops. Trees are pruned with rather short trunks and open heads, heading back while young.

10. We have a few cold storage and other fruit houses, but most of the winter fruit is either sold at once or shipped to cities for cold storage. Farmers keep a large amount for home use and local market in cellars.

WESTERN MICHIGAN.

BY R. D. GRAHAM, GRAND RAPIDS.

1. Species—Apple, peach, plum, cherry, grape and all the small fruits.

2. Varieties: Apples—Oldenburg**, Scarlet Strawberry**, Maiden Blush*, Baldwin**, N. Spy**. Peaches—Crawford Early**, Engle Mammoth**, Crawford Late*, Bronson*, Barber*, Smock*.

SOUTHWESTERN MICHIGAN.

BY CHAS. D. LAWTON.

1. Species—Peaches, apples, grapes, pears, cherries, plums, raspberries, blackberries, strawberries, currants, gooseberries, whortleberries, cranberries.

2. Varieties: Peach—Early Rivers*, Hale Early*, Mt. Rose*, Early Crawford*, Elberta**, Kalamazoo*, Golden Drop*, Late Crawford*, Crosby*, Hills Chili**. Pear—Flemish Beauty**, Bartlett**, Anjou**, Kieffer*. Apple—

Oldenburg**, Baldwin**, N. Spy*, Golden Russet*. Grapes—Concord**, Delaware*, Niagara*.

3. New Varieties: Peach—Snow Orange, yellow, rich, great bearer, Paw Paw, Mich. Engles Mammoth, great size, color rich yellow. Lewis peach, fine yellow color, good grower. Kalamazoo peach, very promising, similar to Yellow Alberge; better. Rubicon or Paw Paw apple, red striped, good keeper; winter.

6. Difficulties—Insects, codling moth, canker worm in apple, cut worm in grape vines, etc., leaf curl in peach. Severe cold weather in winter, late frosts in spring. Difficulties in distributing, i. e., cost of transportation. Seeming want of honesty of commission men. Sometimes rot, mildew and leaf blight, thrip, curculio.

7. How to Overcome—Spraying for codling moth and canker worm. For cut worms, tie band of wool around the vine or young tree, so that the worms do not climb over it; use tins also. To escape frosts, select dry, high lands along the east border of Lake Michigan. In transportation we seek for competition, use boat and railroad, and have much reduced the cost and widened the market. To avoid the commission men, are trying to sell at home. Sell to men who buy and distribute themselves. For rot, etc., spray with Bordeaux mixture.

8. Statistics—From Lawton, a station on the Michigan Central Railroad, the shipments of fruit in 1896, as given by the Railroad Company, amounted to 10,000,000 pounds. Fruit raising has extended vastly in recent years, especially all along the western border of the lower peninsula of the State. From the southwest corner of the State to Grand Traverse Bay fruit raising is the chief agricultural interest. In the southern portion of this belt the peach is the prevailing fruit; also berries. Further north plum raising has become a large and profitable business. It divides with the peach the field in fruit raising. The business of raising fruit, mainly peaches, plums and apples, has increased enormously in ten years in this rich fruit belt in the border of Lake Michigan, an area a few miles wide along the lake the whole length of the lower peninsula. Apples are grown everywhere, but of late most successfully, owing to absence of codling moth, in the northern portion of the lower peninsula, especially in the western half. Grapes are largely grown in the interior of Michigan. The industry has developed mainly in the past 15 years. In places the business is extensive and increasing.

9. Culture and Pruning—For peach trees, sandy, gravelly loam, of good quality. New land is preferable. If far from Lake Michigan, should be high and well exposed, not table land, but rolling. For apple, heavy oak opening or timber soil. Plum and pear, ditto. Grapes do well on such soil as is best adapted to peaches—high, well exposed, sandy, gravelly soil. Train the trees low, with compact heads, sufficiently open to admit light and air and for convenience in picking. For vineyard, set 8 feet by 8 feet or 10 feet by 10 feet. Trellis 5 feet to 6 feet high; 2 wires No. 11, one cane, with four arms; 40 to 50 buds. Practice clean cultivation. Market in Climax baskets holding 8 pounds.

10. Storing and Keeping Winter Fruits—There has been nothing new developed in the matter of storing fruit. All sorts of ways are practiced, sometimes with good results. A well constructed fruit cellar, kept at the proper temperature, gives satisfactory results. In some of the larger towns, as at Kalamazoo, large cold storage buildings have been erected, and commission men, dealers in fruit and fruit growers avail themselves of these

concerns to hold their fruit, paying for the protection given. This plan for holding fruit, i. e., by cold storage, is on the increase.

11. Packages—For apples, to ship to home markets or abroad, well made barrels, holding three bushels; for pears, one-half barrel kegs; for late peaches, bushel baskets have come into general use. The Climax peach basket, holding one-fifth bushel, is also largely used; the old time long peach basket has gone out of use entirely. For grapes the Climax basket, holding 8 pounds and 4 pounds are used exclusively.

MISSOURI.

BY WM. TRELEASE, CHAIRMAN, ST. LOUIS.

Dear Sir—As requested by you some time since, I have asked five horticulturists, whose experience covers very different parts of the State, to prepare lists on the blanks sent. These reports are enclosed. To render their editing more easy, I have had my horticultural assistant, Mr. H. C. Irish, take the Society's list of 1891 and tabulate the Missouri list with reference not only to these reports of 1897, but to the published list. His tables are appended. I trust that from these several papers you may obtain without difficulty the facts you need for the revision of the Society's list. The men whose reports have been secured are among the best known of our horticulturists.

Reports by H. C. Irish, St. Louis; A. Nelson, Lebanon; S. W. Gilbert, Thayer; N. F. Murray, Oregon; L. A. Goodman, Westport.

MISSOURI.—CONTINUED.

1. Species.	Goodman.	Gilbert.	Nelson.	Murray.	Irish.
Apples	*	*	*	*	*
Pears	*		*	*	*
Peaches	*	*	*	*	*
Plums	*	*	*	*	
Cherries	*	*	*	*	*
Apricots	*				*
Quince	*		*	*	*
Grapes				*	*
Strawberries	*	*	*	*	*
Raspberries	*	*	*	*	*
Blackberries	*	*	*	*	*
Gooseberries	*		*	*	*
Currants	*		*	*	*
2. Varieties.					
Apples.—Early:					
Benoni	**				*
Duchess (Oldenburg)	*			**	**
Dyer	*				
Early Harvest	*				*
Keswick	*				
Lowell	*				
Red June	*			*	*
Red Astrachan					*
Summer Pennock	**				
Apples.—Medium:					
Fall Wine	*				
Fulton	**				
Grimes Golden	**				*
Jonathan	**				**
Maiden Blush	**				**
Mother	*				
Wine, Syn.—*Pa. Red Streak*	*				
Porter				*	
Rambo	*				
Rome Beauty	*		*		
Apples.—Late:					
Ben Davis	**	*	*	**	**
Clayton	**				*
Gano	**		*		*
Huntsman	*				*
Ingram		*		*	
Ralls Genet				*	
Mammoth Black Twig	*			*	
Missouri Pippin	*			*	
Minkler	**			*	
Robinson Pippin		*			
Wealthy				*	
White Pippin	**				
Winesap	*			**	
York Imperial	**	*			
Red Russet				*	
Pears.—Dwarf:					
Anjou	*				
Clairgeau	*				
Angouleme	*	*			
Louise Bonne	*				
Lawrence	*				
Seckel	*				
Sheldon	*				
Pears.—Standard:					
Anjou	*				*
Bartlett	*				**
Kieffer	*	*			**
Lawrence	*				
Seckel	*				**
Sheldon	*				
W. Nelis	*				*
Peaches:					
Bokhara				†	
Champion				†	
Elberta	*	*		**	**
Fam. Favorite	*	*			

2. Varieties.	Goodman.	Gilbert.	Nelson.	Murray.	Irish.
Peaches.—*Continued.*					
St. John	*				
Heath Cling				*	
Henrietta	*	*			*
Mrs. Brett	*				
Mt. Rose	*	*		*	
Old Mixon Cling	*				*
Old Mixon Free	*				*
Picquet	*	*			*
Reeves Favorite	*	*			
Salway	*	*			
Stump				*	
Susquehanna		*			
Troth	*	*			
Plums:					
Abundance	*				
Botan	*				
Burbank	*				
Damson	*				
Forest Rose	*				
German Prune	*				
Lombard	*				
Miner	*				
Ogon	*				
Washington	*				
Maryland	*				
Wild Goose	*				
Cherries:					
D'Choisy	*				
Richmond	*	*			
Wood—Gov.	*				
May Duke	*				
Montmorency	*	*			
Morello	*	*			**
Hortense—Reine	*				
Spanish—Yellow	*				
Quince:					
Meech	*				
Missouri Mammoth	*				
Orange	*				
Strawberries:					
Bubach	*				**
Comet		*			
Crescent	*				**
Gandy	*				**
Greenville	*	*			
Haverland	*				*
Parker Earle	*				**
Shuster Gem	*				
Warfield	*				*
Blackberries:					
Early Harvest	*	*			*
Snyder	*				**
Taylor	*				**
Raspberries:					
Babbitt	*	*			
Cuthbert	*				
Hopkins	*				*
Kansas	*				**
Ohio	*				*
Palmer	*				**
Shaffer	*				
Thwack	*				
Turner	*				*
Currants:					
Cherry	*				
Fay	*				*
Red Dutch	*				*
White "	*				
Gooseberries:					
Downing	*				*
Houghton	*				*
Industry	*				*
Smith	*				*

3. New Varieties—Gano is now one of the leading apples; Holman and two or three others not yet sufficiently tested to justify a name. Mr. S. W. Gilbert has a new seedling, which he claims is as large as Ben Davis and a better color, and takes higher polish than Jonathan. He believes it to be the best standard apple he ever saw for late autumn. Mr. A. Nelson reports some promising black raspberries and peaches fruiting this year.

5. Synonyms—Lawyer as Delaware Red Winter; Mammoth Black Twig as Paragon.

6. Codling moth, canker worm, curculio, borers, woolly aphis, sun scald, apple and peach rot, bitter rot and rust.

7. How to Overcome—Can stop the borer with woolen wrappers; codling moth with Paris green; woolly aphis with kerosene emulsion. Curculio appears to be killed by arsenite of lead on apple, peach, plum and apricot, at same time resulting in no injury to foliage, no matter how strong. Fungous diseases are checked to some extent by spraying with Bordeaux. Some practice covering grapes with sacks.

8. Statistics—Acreage of apples and peaches has more than quadrupled. Orchards of 200, 400 and 500 acres have been planted the last few years, as well as one of 1,300 and one of 1,500 acres. The Olden Fruit Farm is at present the largest. The Ozark Orchard Company has 100,000 trees or more; N. F. Murray & Sons, of North Mission, have 16,000 trees. Estimated value of our fruit this year is $20,000,000. South Missouri has shown the greatest advance. Mr. Gilbert thinks there are twenty-five times as many trees as ten years ago.

9. Culture and Pruning—Plant one and two year old trees, with heads trained low. Give good shallow cultivation and little pruning for the apple; good cultivation and cutting back about one-third the previous year's growth for peach. Grow corn, and after a few years fertilize with cow peas or clover.

10. Storing and Keeping Winter Fruits—Cellars in a side hill or deep cellars which have double doors, kept shut during the day and opened at night to admit cool air.

11. Packages—Three bushel barrels for apples; one bushel boxes; four and six basket crates and one-half bushel boxes for peaches, which are sometimes wrapped in tissue paper; 24 box crates for berries. Pear, plum and quince, same as apples and peaches.

NEW HAMPSHIRE.

BY W. D. BAKER, CHAIRMAN, QUINCY.

1. Species—Apples, pears, grapes, peaches.

2. Varieties: Apples—Early Harvest, Red Astrachan, Yellow Transparent, Duchess, McIntosh Red, Porter, Autumn Strawberry, Baldwin, R. I. Greening, Spy, King, Roxbury Russet. Pears—Bartlett, Seckel, Duchess, Anjou. Peaches—Stump, Crawford, Crosby. Grapes—Concord, Delaware, Moore.

3. New Varieties—Granite Beauty apple. Winnepesaukee peach.

6. Difficulties—Railroad worm or apple maggot, curculio, etc.

7. How to Overcome—Have found no remedy for the railroad worm. Treat the others by spraying with Bordeaux mixture and arsenites.

8. Statistics—Apples form the bulk of fruit shipped and are quite generally grown, fully one-half of the apples exported from Boston being grown in New Hampshire. Many cargoes are also shipped from Portsmouth. Peaches are being set in the southern part of the State in place of apples and are proving a success, especially in regard to quality. Strawberries are quite extensively grown in the southeastern section. One grower reports over 150 varieties on trial.

10. Storing and Keeping Winter Fruits—Cold storage.

11. Packages—Depends on varieties and market. Last season crates holding one bushel gave best returns from European markets.

NEW MEXICO.

BY L. BRADFORD PRINCE, CHAIRMAN, SANTA FE.

Dear Sir—I send list of fruits raised here, starred. It is tentative and imperfect, but best we can do. Dr. W. S. Harroun has acted with me, and part of the starring is his.

Apple—Alexander*, Summer Pearmain*, Golden Russet*, Arkansas Black*, Bailey Sweet*, Baldwin*, Bellflower (White)*, Bellflower (Yellow)**, Ben Davis**, Chenango*, Cooper White*, Dominie*, Oldenburg*, Early Harvest*, Fallawater*, Fall Pippin*, Famense*, Haas*, Hubbardston**, Ralls Genet**, Jonathan** Keswick Codlin*, King*, Lawver*, Maiden Blush*, Mammoth Black Twig*, Mann*, Missouri**, Newtown Pippin*, Northern Spy**, Pewaukee*, Porter*, Red Astrachan*, Rambo*, Red Beitigheimer*, Rhode Island Greening*, Rome Beauty*, Roxbury Russet*, Westfield*, Esopus**, Tolman Sweet*, Twenty Ounce*, Vandevere*, Walbridge*, Wealthy*, Willow Twig*, Winesap**, Winter Pearmain*, Wolf River*, Yellow Transparent*. Crab Apples—Hyslop*, Siberian*, Transcendent*, Whitney (No. 20)*. Pear—Bartlett**, Clairgeau**, Anjou*, Diel**, Easter*, Hardy*, Sterkman*, Buffum*, Clapp Favorite**, Summer Doyenne*, White Doyenne*, Angouleme**, Flemish Beauty**, Glout Morceau*, Howell*, Josephine*, Kieffer*, Lawrence*, Louise Bonne**, Mount Vernon*, Passe Colmar*, Drouard*, Seckel**, Sheldon*, Souvenir du Congress*, Vicar of Winkfield*, Winter Nelis*, Winter St. Germain*. Peach—Alexander**, Champion*, Crawford Early**, Crawford Late**, Elberta†, St. John†, Foster*, George IV†, Heath Cling†, Henrietta*, Early York*, Oldmixon Free*, Stump the World*, Wonderful*. Plums and Prunes—Bradshaw**, Burbank*, German Prune**, Green Gage**, Lombard**, Pond Seedling (*Hungarian* prune)*, Engelbert*, Prince of Wales*, Shropshire Damson*, Silver Prune**, Washington*, Wild Goose*, Yellow Egg (Magnum Bonum)*. Apricots—Early Golden*, Moorpark**, Roman*, Royal*. Nectarine—Boston*, Elruge**, Stanwick**. Quince—Meech Prolific*, Orange*, Rea*. Grapes, native—Concord*, Delaware*, Goethe*, Niagara*; foreign—Berger*, Cornichon*, Flame Tokay**, Gros Colmar**, Mission**, Muscat of Alexandria*, Muscatel*, Rose of Peru**. Nuts—Almond (hard shell)*, Black Walnut*, Butternuts*, Maderia Nuts (English Walnuts)*.

NOVA SCOTIA.

BY E. E. FAVILLE, CHAIRMAN, WOLFVILLE.

1. Species—Apples, plums, pears, cherries, quinces, peaches (arranged in order of commercial value). Small fruits of all kinds successfully grown. Cranberries becoming a valuable product, last year's crop over 2,500 barrels.

2. Varieties: Apples—Keswick Codlin*, Maiden Blush*, Fameuse*, Rome Beauty†, Prince of Wales†, Baldwin**, Banks or Red Gravenstein*, Blenheim**, Fallawater**, Golden Russet**, Gravenstein**, Tompkins King*, Nonpareil*, Northern Spy*, Ribston**, R. I. Greening*, Ben Davis**, Alexander*, *Duchess of* Oldenburg*, Hubbardston*, Pomme Grise*, Red Astrachan*, Yellow Bellefleur*, Cox Orange*, Mann*, Ontario*, Wealthy*. Pears—Howell**, Louise Bonne*, Great Britain (Sutton's)*, Winter Nelis†. Plums—Grand Duke**, Abundance*, Bradshaw*, Burbank†, Green Gage**, Lombard**, Moore Arctic*, Washington*, Yellow Egg or Magnum Bonum*. Peaches—Alexander**, Crosby*, Crawford Early**, Elberta†, Hill Chili*, Rivers†, Lewis†. Quinces—Orange**. Grapes—Moore Early*, Diana*. Cranberries—Round or Cherry**, Bell**.

3. New Varieties—Seedling Cranberry, originated by Henry Shaw, Berwick, N. S., local name "Shaw Cranberry;" large, dark red; good shipper, long keeper.

4. Sports: Apples—A bright red sport from the Gravenstein, smooth and regular in form, rather more firm in flesh. Other characteristics similar to parent.

5. Synonyms—Tree agents are constantly substituting spurious varieties for well known sorts, but through the efforts of the N. S. Fruit Growers' Association, nomenclature is pretty well understood.

6. Difficulties—The yearly attacks of "insect pests" and "fungous diseases." (No new ones discovered.) The proper marketing of apples in the English markets and the receiving of reliable returns.

7. How to Overcome—The first two are being treated more thoroughly each year with proper insecticides and fungicides. The latter is hoped to be overcome by the recent formation of a "Co-operative Fruit Company," composed of fruit growers as stockholders, purposing the storage, shipping and selling of all fruits sent to England. This is an experiment here, and is being watched with interest. This move will probably improve the package.

8. Statistics—An approximate estimate has been published stating the number of acres of bearing orchard at 7,000 acres; young orchards not yet in bearing at 5,000 acres, the largest orchards being from 50 to 125 acres. Stock companies are each year setting out large plantations. Varieties of apples most extensively used are Tompkins King, Ribston, Golden Russet, Fallawater, Baldwin, Gravenstein, Ben Davis, Nonpareil. Plums—Moore Arctic, Lombard, Green Gage, Grand Duke, Imperial Gage. The apple crop for 1896 was estimated at 450,000 barrels. The average price net of apples from year to year, about $1.25. Estimates of other fruits hard to compute. The local market consumes the product largely.

9. Culture and Pruning—Thorough drainage, constant cultivation in spring, with corn crops later. Liberal and well balanced food rations in the form of farm manures and commercial fertilizers. Trees in nearly all

instances are pruned to form round tops, the pruning operation taking place in late winter chiefly, with old trees. Young trees are pruned quite largely in summer, after leaves are about developed.

10. Storing and Keeping Winter Fruits—Apples carefully picked from trees in dry weather, put directly into barrels and stored in cool cellar immediately and left until ready for shipment. Cellars are well ventilated, as are also the packing rooms.

11. Packages—Well made, tight barrels, with flat oak hoops. Hard wood staves are best. Half barrels are used for pears. Two to four-quart baskets for plums. Experiments are being tried in shipping early high-colored varieties of apples in bushel boxes.

OHIO.

BY W. W. FARNSWORTH, CHAIRMAN, WATERVILLE,

1. Species—Apples, pears, plums, peaches, quinces, cherries, grapes, currants, gooseberries, blackberries, raspberries, strawberries.

2. Varieties: Apple—Yellow Transparent**, Oldenburg*, Benoni**, Maiden Blush**, Ohio Nonpareil**, Rome Beauty**, Ben Davis**, Grimes Golden**, Dominie*, Baldwin**, N. Spy*, R. I. Greening*. Pear—Bloodgood*, Clapp*, Bartlett**, Sheldon*, Louise Bonne*, Angouleme**, Lawrence*, Kieffer†. Plum—Lombard**, Reine Claude**, Damson*, Richland*, Gueii*, Niagara*, Moore Arctic*. Peach—Smock**, Elberta**, Crosby*, Kalamazoo*, Oldmixon Free*, Stump*, Lemon Free*. Quince—Orange. Cherry—Kentish or Early Richmond**, Montmorency**, Dyehouse*, May Duke*, Napoleon*. Grape—Moore Early*, Worden*, Concord*, Niagara*, Woodruff*, Moore Diamond*. Currants—Red Dutch*, Campbell Early†, Victoria**. Gooseberries—Downing**, Houghton*. Blackberries—Snyder*, Taylor*, Ancient Briton*, Eldorado**, Ohmer†. Raspberries—Palmer*, Gregg*, Eureka*, Loudon*, Cuthbert**, King†. Strawberries—Haverland*, Crescent*, Bubach*, Warfield*, Lovett**, Gandy*.

3. New Varieties: Strawberries—Margaret, productive, large, high color and flavor.

6. Difficulties—Insects and fungi.

7. How to Overcome—By spraying with insecticides and fungicides, clean and thorough culture and proper fertilization.

8. Statistics—Planting has increased in the lake region and in the hill sections of Southern and Eastern Ohio for the past ten years. Low prices have somewhat checked further planting at present, however.

9. Culture and Pruning—Judicious use of manures and fertilizers and shallow cultivation. In pruning, trees and vines should be taken when young and rather trained than subjected to severe pruning.

10. Storing and Keeping Winter Fruits—Cold storage with ice.

11. Packages—Barrels for apples and for pears before they are ripe. For perishable fruits, small baskets and packages; berries in quart baskets, packed in 24 and 32 quart crates.

ONTARIO.

BY ALEX. MC D. ALLAN, CHAIRMAN, GODERICH.

1. Species—All the subjoined list is grown, especially upon the west of Lake Ontario, along Lake Erie and the east coast of Huron.

2. Varieties: Apples—American Golden Russet*, Adams Pearmain, Baldwin**, Ben Davis*, Blenheim Pippin**, Blue Pearmain**, Cabashea*, Canada Baldwin*, Colvert*, Cranberry Pippin**, Oldenburg**, Early Joe*, Edgar Red Streak*, Esopus*, Fallawater*, Fall Pippin*, Flushing*, Fameuse**, Gravenstein**, Green Newtown*, Grimes Golden*, Hubbardston**, Hurlbut*, Jefferis**, Jonathan**, Keswick*, King**, La Rue*, Man*, Magog*, McIntosh Red**, Melon*, Mother**, Newtown Spitzenburg*, Northern Spy**, Newtown Pippin*, Ontario**, Peck Pleasant*, Pennock*, Pewaukee*, Peach*, Phoenix*, Pomme Grise*, Primate*, Red Canada*, Red Russet*, Rhode Island**, Ribston**, Roxbury*, St. Lawrence*, Swazie (Pomme Grise)**, Tolman*, Wagener*, Wealthy**, Westfield*, Williams Favorite†, Wine*, Yellow Bellflower*, Yellow Transparent*. Grapes—Agawam**, Aminia**, Barry*, Brighton**, Catawba*, Concord*, Delaware**, Iona*, Lady*, Lindley**, Massasoit*, Merrimac*, Moore Early*, Mills*, Moore Diamond*, Niagara**, Rogers No. 33*, Salem*, Senasqua*, Vergennes**, Worden**, Wilder. Pears—Ananas *d'ete*, Bartlett**, Giffard*, Clapp**, Summer Doyenne *(d'ete)**, Kirtland*, Lucrative*, Bosc**, Hardy**, Superfine**, Angouleme**, Boussock**, Gray Doyenne*, White Doyenne*, Flemish Beauty**, Howell**, Louise Bonne*, Seckel*, Sheldon*, Anjou**, Clairgeau**, Dempsey**, Diel*, Goodale*, Malines*, Lawrence*, Winter Nelis*.

3. New Varieties—Stott Russet is the best new apple I know of and will ship and market better than any of the other russets in cultivation. It is well tested, a strong grower, good bearer, hardy and fine.

5. Synonyms—Unprincipled nurserymen have occasionally tried to sell old kinds under new names, such as Alexander as "Czar," "Emperor," etc.

6. Difficulties—Hard to get growers to keep abreast of times and use means to meet oncoming diseases and insects. Fungi and codling moth our worst enemies so far, except in Niagara peninsula, where San José scale has appeared.

7. How to Overcome—By constantly bringing these matters to the public notice in the press, and especially at Farmers' Institute meetings. We have lecturers for Farmers' Institutes in every district, so that the whole Province is covered yearly. We also do a good work in this way through our Fruit Growers' Association and local Horticultural Societies.

8. Statistics—My time is too short to go into this. Suffice it to say that Ontario has made great progress generally in fruit culture and now we export all fruits. Our concern now is to find markets; my own county (Huron) has an apple orchard capacity of over half a million barrels per year. Farmers are our growers of fruits. They have orchards varying from three or four acres up to thirty, with a few who make a specialty of fruit culture, here and there in the Province, in favored sections, with larger orchards. These orchards include generally apples, pears, plums, cherries, grapes, and in favored sections also peaches.

9. Culture and Pruning—Constant culture up to midsummer, regular manuring and keeping sheep well fed in orchard, with June pruning have given

best results. Pruning is generally done in March because growers have more time then. Those who do not give sheep the run of the orchard generally allow pigs to attend to the matter, and too often depend upon them for the cultivation with snout power, which is better than none, though not ornamental.

10. Storing and Keeping Winter Fruits—Fruits are generally shipped to markets when gathered, but now we are going more into storing in cold storage kinds required for later market consumption, and I look for a new era in a few years through cold storage influence for shipping and keeping.

11. Packages—Barrels are still the leading packages for apples. Bushel and half bushel boxes are used and doing good service. Boxes similar to those used for shipping eggs, with fillers, are used for apples with splendid results.

OREGON.

BY E. L. SMITH, CHAIRMAN, HOOD RIVER.

The possibilities of the State of Oregon for the production of all fruits of the temperate zone seem almost limitless.

The observations and inquiries of many years convince me that we have in this State nearly twelve thousand square miles, or approximately seven and a half million acres, of soil adapted to horticultural pursuits.

Three great mountain ranges, ever important factors in climatic conditions, give us a variety of temperature, moisture and sunshine, that enables us to produce the products of many lands, from the tender grape of Southern Europe to the hardier productions of more northern latitudes. The warm valleys of Southern Oregon, and those of the Columbia and its tributary streams east of the Cascade Range, afford the heat and sunshine to give color and sweetness to the peach and the grape, while the cooler coast regions and the great Willamette valley grow to perfection the prune, the cherry, the pear and all the small fruits. It is needless to mention what particular varieties of these fruits do well in Oregon, for all are seemingly at home with us. As an illustration of this fact, in the little valley of Hood River, situate in the eastern foot hills of the Cascade Mountains, more than one hundred and fifty varieties of apples have been successfully grown.

I am inclined to the opinion, however, that varieties originating north of the Ohio are less sensitive to extreme changes of temperature than those of more southern origin. Our orchard acreage has been greatly increased during the past four years, prunes being extensively planted, especially in Western Oregon. Many of these young orchards are bearing their first crop this season.

The subject of evaporation is assuming great importance, and many large commercial evaporators are being erected.

There is great inquiry for better knowledge of the process of evaporation, including not only the proper construction of dryers, but chemical changes as affected by the degree and duration of heat.

It is to be regretted that our Experiment Stations and our National Pomological Society have not entered more fully upon this work and given us a scientific authority upon this important subject.

The marketing of our fresh fruits is, of course, a matter of gravest concern. Eastern shipments too often bring disappointing returns. Transportation and commissions take the grist and the grower has to be content

with a meager toll. We are not inclined, however, to ascribe all the fault to these sources. Faulty packing, over production and unwise distribution are frequently the causes of small returns. We are hopeful, however, of ultimately reaching the Asiatic markets, while the great valley of the Yukon, with no charge for refrigeration, bids fair to absorb a share of our surplus products. Our crying necessity at the present time is more accurate knowledge with which we may successfully overcome the many new and adverse conditions that the horticulturist has to contend with.

The effective and economical treatment of fungous growths is a matter of much interest to us at this time.

I transmit herewith reports from the members of the Committee on Oregon Fruits, as follows: D. W. Coolidge, for the Southern portion of the Willamette Valley; H. E. Dosch, for the Northern portion of the Willamette Valley, and that of A. I. Gale for that portion of Eastern Oregon east of the Blue Mountains. I regret that the member of the Committee from the Southern portion of the State has failed to report.

A list of varieties adapted to the middle Columbia section and to Southern Oregon would be simply a duplication of these reports, with additional varieties of European grapes.

The old neglectful horticulture is fast passing away, and our people are learning that only the most intelligent methods will insure success.

Oregon, with her ninety-five thousand square miles of sparsely populated area, invites the lover of growing trees, of fruits and flowers, to share her genial climate and responsive soil.

NORTHERN WILLAMETTE VALLEY.

BY HENRY E. DOSCH, HILLSDALE, OREGON.

1. Species—Apples, pears, prunes, cherries, plums, and of late walnuts, almonds and chestnuts.

2. Varieties: Apples—Newtown Pippin**, Gravenstein**, Baldwin**, Esopus*, N. Spy*. Pears—Bartlett**, Fall Butter**, Anjou*, Clairgeau**. Prunes—Agen*, Italian**. Cherries—Napoleon* (syn. *Royal Ann*, Oregon*, Bing**, Hoskins**, Lambert**. French walnuts—Mayette**, Franquette**, Parisienne*. Almond—Languedoc or Grosse Tendre*. Chestnut—Grosse Precoce**, Paragon*, Nouzillard**, Combale*.

3. New Varieties: Cherries—Hoskins, Lambert and Occident; large size and good shippers. Prunes—Dosch, extra large, dark blue, meaty and a fine shipper, with fine flavor.

6. Difficulties—Some insects and fungi.

7. How to Overcome—By spraying with compounds, especially applicable for each disease and for insects.

8. Statistics—Largest plantations have been of prunes, which averaged well, bringing 4 to 6 cents per evaporated pound. Apples are mostly planted this year and some pears. Since I introduced French walnuts into this State many plantations are being made, averaging from one to forty acre groves, and many are now in bearing, proving that the more hardy varieties, as given elsewhere, do very well; the more tender varieties will not do, as the staminate blossoms appear, mature and drop off three weeks before the pistillates appear, hence no pollination.

9. Culture and Pruning—The usual plowing and subsoiling, with clean

cultivation, bring best results, except cherries, which should be sown to grass and left in sod when in bearing, to prevent gummosis. Pruning—Goblet shape, leaving center stem.

10. Storing and Keeping Winter Fruits—Either in cellars built for this purpose or cold storage, especially for apples and pears.

11. Packages—Boxes, of sizes adapted for the fruit used.

SOUTHERN WILLAMETTE VALLEY.

BY D. W. COOLIDGE.

1. Species—Apples, pears, prunes, cherries, quinces, chestnuts, English and black walnuts, grapes, blackberries, raspberries, strawberries, gooseberries and currants.

2. Varieties: Prunes—Fellenburg or Italian*, Agen*, *Petite* or *French*. Plum—*Reine Claude de* Bavay*. Pear—Winter Bartlett†, Bartlett*, Winter Nelis*. Apple—Esopus Spitzenburg*, Lawver*, Jonathan* and Baldwin*. Cherry—Napoleon*, Bing**, Centennial* and Black Republican*. Chestnut—American Sweet. Walnut—Mayette*, Franquette*. All American grapes, Black Hamburg and Chasselas. All varieties of small fruits.

3. New Varieties—The Winter Bartlett pear, identical with Bartlett in appearance. Ripens from December to January.

6. Difficulties—Probable overproduction of prunes. Transportation rates too high. Gummosis of plum and cherry. Scab *(Fusicladium dentriticum)* and codling moth of apple and pear.

7. How Overcome—Have never entirely succeeded in controlling gummosis. Codling moth can be kept in check by spraying at least four times during the season with Paris green, 1 pound to 200 gallons, 4 pounds soap, 8 pounds lime, and by banding the trees, examining bands once every ten days after July 1st.

9. Culture and Pruning—Thorough pulverization and open inverted-goblet pruning.

11. Packages—Four basket crates for prunes and plums, 45 pound boxes for apples and 40 pound boxes for pears.

EASTERN OREGON.

BY A. I. GALE.

1. Species—Apples, pears, plums, prunes, cherries and all of the small fruits do well here. Winter apples, pears and cherries are, however, being most generally planted.

2. Varieties: Apples—Yellow Transparent*, Oldenburg**, Gravenstein*, Yellow Bellflower*, Tompkins King*, R. I. Greening*, Blue Pearmain*, Wolf River**, Lawver**, Gano†, Mammoth Black Twig†, Babbitt†, Scott Winter†, N. W. Greening†, Rome Beauty**, Wealthy**, York Imperial*. Pear—Bartlett**, Clapp Favorite**, Winter Nelis*, Anjou**. Prune—Italian**, Agen**, Pacific†. Cherry—Tartarian*, Napoleon**, Republican*, May Duke*, Belle Magnifique**, Bing†, Geer†, Grande Ronde†.

3. New Varieties—Grande Ronde cherry, early, large, black; best shipper. Geer cherry, larger, later and better in every way than Napoleon (Syn.

Royal Ann). These are well tested here. Pioneer strawberry, early, very productive; best shipper.

5. Synonyms—Many old varieties, especially apples, have been sold through this section under new names, but mainly by tree dealers.

6 Difficulties—Insect pests, and transportation charges for fruit.

7. How to Overcome—By spraying, not overcome yet. What is wanted is union in packing, grading and shipping. By combining, could get better rates.

8. Statistics—Fruit growing is in its infancy here in Eastern Oregon, but hundreds of acres are being planted and mostly being well cared for. The largest orchards are from 25 to 130 acres, and winter apples, pears, cherries and prunes are being planted. Apples lead, and but few prunes are being planted. Ben Davis leads in apples, with Gano, York Imperial, Lawyer; Bartlett and Winter Nelis in pears; Italian in prunes; and Napoleon (Syn. *Royal Ann*), Bing and Republican in cherries.

9. Culture and Pruning—Deep plowing, with thorough, shallow, after cultivation, and on the drier ground some irrigation. Low heads, severe heading back for first few years, then moderate pruning give best results here, as we have plenty of sun.

10. Storing and Keeping Winter Fruits—Outdoor cellars mostly used here, and fruit stored in boxes. Fruit grown here at this altitude has the very best keeping qualities, and in any ordinary winter varieties will keep without special care until spring.

11. Packages—Apples and pears, 40 pound box; plums and prunes, 4 basket crates mostly, and for cherries, 10 pound California cherry box. None are shipped to Europe.

QUEBEC.

BY JOHN CRAIG, CHAIRMAN, OTTAWA.

1. Species—Apples, plums, pears, cherries, raspberries, strawberries, gooseberries, cranberries (blueberries wild in quantity).

2. Varieties: Apples—Yellow Transparent*, Oldenburg*, Canada Red*, Winter St. Lawrence**, Fameuse**, Scott Winter**, Golden Russet**. Plum—De Soto*, Hawkeye*, Reine Claude*, Shropshire Damson*. Cherries—Early Richmond*, Minnesota Ostheim*, Amarelle Late*.

3. New Varieties—Canada Baldwin apple, hardy tree; good keeper. Longfield, a Russian, doing well. McMahon, Wis., doing well. Seedling plums and gooseberries.

5. Synonyms—Abundance=*Botan*; Lawyer=*Delaware Red Winter*.

6. Difficulties—Severity of climate.

7. How to Overcome—Methods of culture. Selection of varieties.

8. Statistics—Cannot give figures. Production of apples past season, about 2,000,000 barrels. For varieties see previous list. St. Lawrence, Blue Pearmain and Golden Russet are being widely grown.

9. Culture and Pruning—Cultivation for 10 years, clover sod afterwards, pastured by sheep in some cases. Pruning done during early March. Orchards thinned by removing weak trees.

10. Storing and Keeping Winter Fruits—Underground cellars. Apples packed in barrels.

11. Packages—Barrels for winter apples, bushel boxes for summer and autumn apples, which are selected, and of high quality and handsome appearance.

RHODE ISLAND.

BY L. F. KINNEY, CHAIRMAN, KINGSTON.

Fruit is not extensively grown in Rhode Island for market, although the apple, pear, peach, quince, raspberry, strawberry, blackberry, currant and cranberry all reach a high degree of perfection here when skillfully managed, and the choicest kinds are not uncommon in the humblest garden. Plums, cherries and grapes are frequently injured along the coast by seafogs when the fruit is maturing in mid-summer, consequently they are planted sparingly. Grapes are more successfully grown under glass than out of doors, and when so cultivated they appear to be a profitable crop.

When viewed from a business standpoint, fruit culture in Rhode Island presents some perplexing problems. It is apparent that there has been substantial progress in the art of raising fruit during the last quarter of a century. Varieties have been improved, important discoveries relating to the fertilization of fruits have been made and both insect pests and fungous diseases now yield to treatment; but all of this time competition in growing crops for market has been becoming closer and thus far there has been no united effort on the part of local fruit growers to preserve a margin of profit between the actual cost of their products and the average selling price. Consequently it appears to be true that while the art of raising fruit has been advancing, fruit growing as a business has been becoming less remunerative. It is apparent that this latter condition is antagonistic to future progress in commercial fruit culture—to the production of the finest fruit with the least possible expense. On account of this condition there is a tendency for the work to fall into incompetent hands, to be executed with much waste of time, and, what is worse than anything else, to lower the standard of quality of the products. Already large quantities of fruit are brought into Rhode Island markets from other States for no other reason than because much of that which is grown here is not good enough to satisfy the demands of purchasers. If Rhode Island growers are to hold the local trade they must produce fruit of the first quality at a moderate price, and then, if fruit culture is to be made more profitable as a business, there must be a division of labor that will admit of a larger output of produce with a proportionally smaller expense, and in addition the larger growers must unite to protect their mutual interests.

VERMONT.

BY ARTHUR H. HILL, CHAIRMAN, ISLE LA MOTTE.

1. Species—Apples, pears, plums, cherries, grapes.

2. Varieties: Apples—Fameuse or Snow**, Tompkins King**, Northern Spy**, Esopus**, Winesap**, Arctic 1, Ben Davis*, R. I. Greening*, *Palmer Greening*, Syn. of Washington Royal†.

6. Difficulties—Codling moth, apple scab, San José scale.

7. How to Overcome—By carefully spraying with Bordeaux mixture and Paris green, also kerosene emulsion.

8. Statistics—125,000 barrels to 150,000 barrels, valued at $200,000 to $250,000, for Vermont State; 8,000 to 10,000 barrels grown in this town (Isle La Motte), and about 40,000 barrels in this (Grand Isle) county. Prices here about $2.00 per barrel as a rule, though last season prices ranged from $1.15 to $1.50 per barrel. Largest orchards from 1,500 to 2,500 trees.

9. Culture and Pruning—Thorough cultivation, with lots of barnyard manure and hard wood ashes. Prune to admit plenty of sunlight.

10. Storing and Keeping Winter Fruits—Apples are usually sold as soon as picked. Buyers from Boston, New York and Philadelphia markets are usually on the ground at picking time.

11. Packages—New flour barrels.

VIRGINIA.

BY WM. B. ALWOOD, CHAIRMAN, BLACKSBURG.

1. Species—Apples, pears, quinces, cherries, plums, peaches, grapes, raspberries, blackberries, strawberries, currants, gooseberries, Juneberries, chestnuts and walnuts.

2. Varieties, Coast Region: Strawberry—Michel**, for early market; Brunette**, late, for home use. Grape—Moore Early**, for early market. Peach Elberta**, medium, family and market (by H. E. Van Deman, Parksley.)

Middle and Piedmont Virginia: Apple, early—Red June*, Early Harvest**, Yellow Transparent†; mid-season—Winter Paradise**, Grimes Golden* Bonum**, Fallawater*, Virginia Beauty*; late winter—Yellow Newtown**, Winesap**, York Imperial**, Mammoth Black Twig†, Green Cannon Pearmain* (by Alwood). Peach, early—Alexander*, Gen. Lee*, Bishop Early**, Sneed†, Triumph†; medium—Crawford Early**, Elberta**, Chinese Cling*, Heath Cling**, Smock*, Albright Winter*, Stark†. Strawberry—Haverland**, Tennessee*, Woolverton*, Bubach* (No. 5). Raspberry—Cuthbert**, Hilborn*, Gooseberries—Downing*. Plum—Wild Goose*, Abundance*, Damson*, Red June*, Wickson†, Gold† (Geo. E. Murrell, Coleman's Falls).

Great Valley and Mts.: Apple, early—Early Ripe**, Tetofsky*, Oldenburg*, Yellow Transparent**, Jersey Sweet**; medium—Maiden Blush**, Fall Pippin**, Fall Orange**, Smokehouse**; late—York Imperial**, Newtown Pippin** (special situations), Winesap*. Pear, early—Summer Doyenne**, Wilder Early*; medium—Bartlett**, Seckel**; late—Sheldon**. Quince—Champion**, Orange*. Cherry—Early Purple*, Coe Transparent*; medium—Reine Hortense**, Olivet***; late—Louis Phillippe*, Ostheim*, Montmorency**. Plum—Ogon*, Botan*, Wild Goose*, Genii**; mid-season—Bradshaw*, Lombard*, Yellow Egg**; late—Imp. Gage*, Reine Claude*, Shropshire Damson**. Peach, early—Briggs May*, Waterloo*; medium—Gov. Garland*, Stump**, Lady Ingold*, Mt. Rose*; late—Reeves Favorite*, Old Mixon Free**. Grape, early—Moore Early**, Moore Diamond*, Niagara*; medium—Concord**, Lady Washington*, Brighton*. Raspberry—Cuthbert**, Hilborn*, Gregg*, Golden Cluster*. Blackberry—Rathbun*, Taylor**. Strawberry—Tennessee*, Haverland*, Bubach* (No. 5). Currant—Red Dutch, Red Cherry. Gooseberry—Houghton*, Downing**, Pale Red*. Juneberry—Success*. (Alwood.)

3. New Varieties: Apples—Grassy Mountain, fall, of unusual size and beauty; Glen Apin, fall, dessert, of good quality; Bryant, a most beautiful winter apple of finest quality and good keeper.

4. Sports: Plums—White Damson, a sport from Shropshire.

5. Synonyms—York Imperial as *Johnson's Fine Winter*, Newtown Pippin as *Albemarle Pippin.*

6. Difficulties: Apples—Brown spot, orange rust, black rot, bitter rot, borers and San José scale. Peaches and plums—Brown rot, curculio, borers, San José scale on both. Spring frosts are serious.

7. How to overcome—Insects and fungi, by spraying for all external attacks; borers are dug out and washes applied.

8. Statistics—We have no system of gathering fruit statistics, but orcharding is rapidly on the increase; peach orchards of 1,000 to 20,000 trees are being planted; new apple orchards of 500 to 5,000 trees, and so on with other fruits.

9. Culture and Pruning—Clean culture in spring with crop of cow peas for summer. This cultivated down and sowed to crimson clover or rye for winter, to be plowed down in early spring.

10. Storing and Keeping Winter Fruits—All fruits store badly because our long season over ripens them. It is best to pile up winter fruits and let them sweat under a straw cover in orchard, and then sort and barrel a few weeks later. Cold storage is unknown except in cities.

11. Packages—Berries, 32 qt. crates; peaches in ⅜ bu. baskets; pears in ½ bbl., and apples in standard flour barrels.

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PART II

CATALOGUE OF FRUITS

1897

BULLETIN No. 6.

U. S. DEPARTMENT OF AGRICULTURE.

DIVISION OF POMOLOGY.

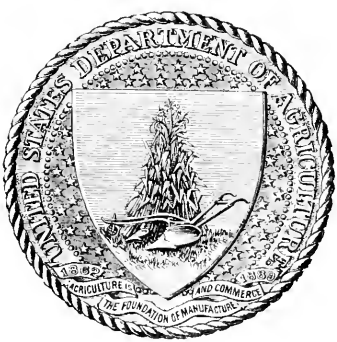
CATALOGUE OF FRUITS

RECOMMENDED FOR CULTIVATION IN THE VARIOUS SECTIONS OF THE UNITED STATES

BY THE

AMERICAN POMOLOGICAL SOCIETY.

REVISED BY A COMMITTEE OF THE SOCIETY,
T. T. LYON, CHAIRMAN.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1897.

LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF POMOLOGY,
Washington, D. C., August 18, 1897.

SIR: At the twenty-fourth session of the American Pomological Society, held in Sacramento, Cal., January 16, 17, and 18, 1895, a "committee to confer with the United States Department of Agriculture for the purpose of revising and publishing the fruit catalogue as a bulletin of the Department" was appointed. This was in accordance with a resolution of the society, and met with the approval of the then Secretary of Agriculture, expressed through Mr. S. B. Heiges, then Pomologist of the Department. Pursuant to this arrangement, the work of preparing a revised catalogue of fruits, with special reference to the sections to which the different varieties are adapted, was undertaken by the standing committee of the society on revision of the catalogue in cooperation with the Division of Pomology of this Department. The present compilation being a revised catalogue of fruits, comprising such varieties as have been found best adapted to the various fruit districts of the country, as indicated by the starring in the catalogue, is the result of these joint labors.

There is a large and growing demand for this catalogue from fruit growers, which the society, for lack of funds, has been unable to supply; hence the request that it be printed as a bulletin of the Department, a course explicitly approved by your honorable predecessor under date of January 13, 1897.

Mr. T. T. Lyon, to whose painstaking, intelligent work much of the completeness of the present work is due, is chairman of the standing committee of the American Pomological Society on revision of catalogue, the other members being L. H. Bailey, Henry L. Lyman, Louis A. Berckmans, and C. L. Watrous. Special credit is also due to Mr. W. A. Taylor, assistant pomologist.

With the above explanations, I have the honor to recommend the publication of the present catalogue as Bulletin No. 6 of this Division.

Very respectfully,

G. B. BRACKETT, *Pomologist.*

HON. JAMES WILSON,
Secretary of Agriculture.

In accordance with agreement, publication as recommended is hereby authorized.

JAMES WILSON,
Secretary of Agriculture.

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ILLUSTRATIONS.

INTRODUCTION.

In submitting the accompanying report to Hon. P. J. Berekmans, president of the American Pomological Society, the chairman of the committee on revision of catalogue desires to state as follows:

With the increased number of political divisions to be represented, together with the rapid and extensive development of pomology, especially in the direction of commercial fruit culture, the catalogue, in its original and time-honored form, has become cumbersome and inconvenient.

Arrangements having been effected for its publication and extensive distribution by the United States Department of Agriculture, it has been deemed advisable to change the form of the volume so as to better adapt it to popular use.

After due consultation with various persons, both officials and others, this has been rendered practicable through the adoption of the plan of starring for pomological districts rather than for States.

Owing to the failure to receive revisions of lists of varieties, with needed descriptions and starring, from many important fruit-growing localities, and especially to the adoption of the plan of combining the lists and the starring of several States in a single district, and still further to the fact that the former starring represents States only, this revision must unavoidably be liable to errors. These can only be surely corrected through the agency of subsequent reports by persons or committees familiar with the pomology of the districts they represent.

For more convenient reference northern and tropical fruits are classified, alphabetically, in separate divisions; and species and varieties are also classified, alphabetically, in sections and subsections.

Since the revision has been in present hands, owing to lack of reports there has been in very many cases inability to bring and keep the revision up to date, with the result that in many cases there is reason to suspect that, to some extent, at least, the varieties recommended may have become more or less obsolete.

Notwithstanding the earnest efforts of the chairman of the general fruit committee prior to the last meeting of the society (January, 1895), the responses were so very few, and often so imperfect, that a revision would necessarily have been little more than a reprint. Such revision was therefore deferred.

During the past year, by earnest appeals (in many cases to persons other than officials or members of the society), a large amount of material has been secured for the purpose, although much of it proves unsuited for use in the revision, as in many cases it includes numerous new or local varieties which, although more or less of them may ultimately prove widely valuable, are yet too little known to warrant their insertion in a general catalogue.

Reports have been received from W. S. Devol, Arizona; John T. Stinson, Arkansas; N. S. Platt, J. H. Hale, and R. S. Hinman, Connecticut; A. H. Manville, Florida; G. H. Miller, Georgia; C. L. Watrous, Iowa; G. C. Brackett, Kansas; D. H. Knowlton, Charles S. Pope, and W. M. Munson, Maine; J. S. Harris, Minnesota; S. M. Tracy, Mississippi; L. R. Taft, Michigan; W. B. Harlan, Montana; L. L. Van Slyke, New York; W. W. Farnsworth, Ohio; George C. Butz and H. M. Engle, Pennsylvania; L. F. Kinney, Rhode Island; R. L. Watts, Tennessee; T. V. Munson, A. M. Ragland, and F. T. Ramsey, Texas; W. B. Alwood, Virginia; J. A. Balmer, Washington; John A. Myers, West Virginia, and E. S. Goff, Wisconsin. Valuable aid has also been rendered by W. A. Taylor, assistant pomologist, Washington, D. C., to whom the preparation of the map of pomological districts is largely due.

T. T. LYON,
Chairman of Committee on Revision of Catalogue.

PLAN OF THE CATALOGUE.

The catalogue includes such species and varieties of fruits and nuts as are recommended for cultivation in the United States and in British America, and these are arranged alphabetically in three divisions, namely:

Division 1. Species adapted to the climate of northern regions, including the Northern and Middle United States and the adjacent portions of British North America.

Division 2. Tropical and semitropical fruits.

Division 3. Species of indigenous and introduced fruits and nuts not included in the foregoing divisions, which have not, under cultivation or otherwise, so far departed from their specific types that the variations have been designated and propagated under recognized varietal names.

The districts within which a variety is found successful are indicated by an asterisk (*); if especially desirable, by two asterisks (**); if promising, but not fully tested, by a dagger (†); and if tested and found undesirable, by the minus sign (—).

Prefixes, suffixes, secondary words, and apostrophic or possessive terminations, together with words whose significations are expressed in the descriptive columns, are eliminated from the names of varieties when not required to insure identity, and such words, when used, together with synonyms, are *italicised*.

Size and quality, as usually expressed in pomological phraseology, are stated in the tabulations of varieties upon the scale of 1 to 10, as follows:

Size.	Scale.	Quality.
Very small	1	Very poor.
Small	2–3	Poor.
Small to medium	3–4	Poor to good.
Medium	5–6	Good to very good.
Medium to large	7–8	Very good.
Large	8–9	Very good to best.
Very large	10	Best.

Foreign names of varieties are only anglicised in the interest of brevity or for convenience of pronunciation.

The entire region represented is divided into the following fifteen pomological districts, with little regard to State or provincial boundaries, but with primary reference to the influence of latitude, elevation, prevailing winds, and oceanic and lacustrine exposures upon their adaptation to pomological pursuits (see map, p. 10):

District No. 1.—Maine above 500 feet elevation; New Hampshire, Vermont, and New York north of latitude 44°; upper Michigan, together with Manitoba east of the ninety-fifth meridian; Ontario north and east of Lake Simcoe; Quebec, New Brunswick, and Prince Edward Island.

District No. 2.—Nova Scotia; Maine below 500 feet elevation; New Hampshire, Vermont, and New York south of latitude 44°; Ontario south and west of Lake Simcoe; lower Michigan; Wisconsin east of the eighty-ninth meridian; Ohio north of latitude 40°; Pennsylvania above 500 feet elevation; Connecticut, Rhode Island, and Massachusetts, together with a portion of northern New Jersey.

District No. 3.—Southern New Jersey; Pennsylvania below 500 feet elevation; Delaware; Maryland and Virginia below 500 feet elevation.

District No. 4.—The mountain region of Virginia, North Carolina, and South Carolina; Georgia and Alabama above 1,000 feet elevation; Kentucky and Tennessee above 500 feet elevation; Ohio south of latitude 40°; West Virginia and western Maryland.

District No. 5.—North Carolina, South Carolina, and Georgia below 1,000 feet elevation.

District No. 6.—Florida,[1] the Gulf coast of Alabama, Mississippi, Louisiana, and Texas below 100 feet elevation.

District No. 7.—Alabama, Mississippi, and Louisiana between 100 and 500 feet elevation; Texas east of the ninety-seventh meridian and between 100 and 500 feet elevation; southeastern Arkansas, small portions of southeastern Missouri and southern Illinois; western Kentucky and Tennessee below 500 feet elevation.

District No. 8.—Indiana; Illinois (except the small portion at the extreme south below 500 feet elevation included in District No. 7), and a portion of northern Kentucky adjacent to the Ohio River.

District No. 9.—Iowa south of latitude 42°; Missouri; northwestern Arkansas above 1,000 feet elevation; Oklahoma; Indian Territory; Kansas, and Nebraska.

District No. 10.—Wisconsin west of the eighty-ninth meridian; Minnesota; Iowa north of latitude 42°.

District No. 11.—North and South Dakota, Montana, and Wyoming, with the adjacent provinces of Manitoba, Assiniboia, and Alberta.

[1] The portion of District No. 6 (in Florida) lying south of latitude 27° is assumed to be the only region in the United States possessing a tropical climate. Such varieties as are reported successful only in that locality are indicated by the letter s in connection with the starring of this district.

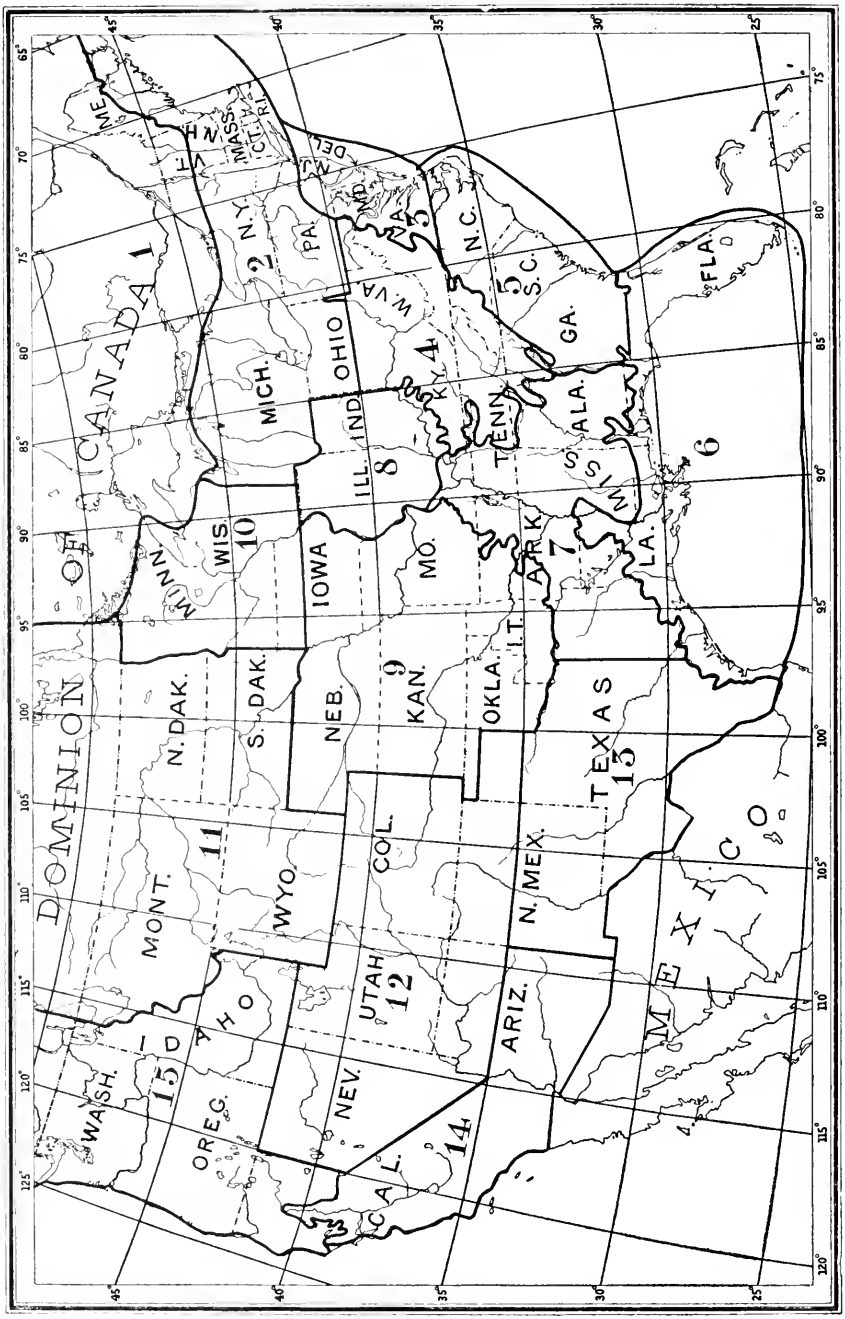
District No. 12.—Colorado, Utah, and Nevada, with the portions of Arizona, New Mexico, and Texas north of latitude 35°.

District No. 13.—Texas west of the ninety-seventh meridian and south of latitude 35°, omitting the Gulf Coast region below 100 feet elevation (included in District No. 6), and including the portion of New Mexico south of latitude 35°.

District No. 14.—Arizona south of latitude 35°; California south of latitude 39°, including all points in the valley of the Sacramento River up to 1,000 feet elevation.

District No. 15.—California north of 39°, except the portion of the valley of the Sacramento River included in District No. 14; Oregon, Washington and Idaho, and the adjacent province of British Columbia.

Map showing pomological districts



CATALOGUE OF FRUITS.

Division I.—FRUITS MAINLY ADAPTED TO NORTHERN LOCALITIES.

This division includes such cultivated species, commonly designated "hardy" fruits and nuts, as have developed distinct varieties which are propagated on a commercial scale by some of the various methods of bud propagation.

Section 1.—APPLES. (Pyrus.)

SUBSECTION 1.—CRABS. (*P. BACCATA.*)[1]

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: c, conical; i, irregular; o, oblate; ob, oblong; ov, ovate; r, round. Color: g, green; r, red; ru, russet; s, striped; w, white; y, yellow. Flavor: a, acid; m, mild; s, sweet. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late; vl, very late. Use: c, cider; d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Eng., England; Eur., Europe; Fr., France; Ger., Germany; Holl., Holland; Ont., Ontario; Rus., Russia; Scot., Scotland.]

Name.	Description.								Districts and starring.														
	Size.	Form.	Color.	Flavor.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Beach	5	r	r	s	5	em	km	Am		*													
Brier	7	r	r	s	5	em	km	Wis												†			
Elgin	7	rob	yr	a	6	l	km	Ill	*	*		*											
Excelsior	8	ro	yrs	a	6	e	k	Minn	*	*													
Gibb	6	o	yr	a	9	e	k	Wis		*								*					
Hyslop	6	r	r	a	3	em	km	Am.?	*	**	*	*		*		*	*	*	*	*	**		*
Martha	5	o	yr	a	5–6	e	k	Minn		*						*	**	*					
Marengo	6	ro	yr	a	3–4	l	km	Ill	†	*													
Minnesota	10	ob	yr	a	5	l	km	Minn		*										†			
Montreal	8	rob	yr	a	3–4	ml	ckm	Am	*	*						*	*	*					
Orange	5	r	y	.....	3–4	l	k	Am	*	*													
Red Siberian	4	rob	r	m	3–4	e	k	Fr	*	*	*				*	*	*			*			
Spitzenburg	3–4	.....	rru	ms	.....	vl	.....	Am				*							**				
Transcendent	5	r	yr	a	5–6	e	km	Am	**	**	*	**			*	**	**	*		*	*		
Van Wyck	8–9	rc	wr	s	4–5	e	d	N. Y	*	*													
Whitney *No. 20*	8	rc	r	m	8–9	em	dkm	Ill	**	*					*		*	*	*				*
Yellow Siberian	5	r	y	a	3–4	e	km	Am	*	*	**	**		*		*				*			

SUBSECTION 2.—APPLES. (*P. MALUS.*)

Alexander	10	oc	yrs	ma	5	em	km	Rus		*	*		*				*		*	**	*	**		*	*
Antonovka	6	ove	y	ma	7	m	km	Rus												*					
Arkansas (*Mam. Blk. Twig*)	9	ro	yr	m	9	l	km	Ark					*		**		*		*						
Arnold	5–6	o	yr	m	5–6	m	dm	Ont		*															
Autumn Bough	5–6	rc	gy	s	5–6	m	d	Am		*					*					*		*	*	*	
Autumn Swaar	9	rc	yru	m	5–6	em	d	Am.?		*	*					*	*							*	*
Bailey *Sweet*	8–9	r	r	s	7–8	ml	dm	N. Y		**						*	*								
Baker	8–9	roc	yr	m	5–6	l	cm	Conn		*							*								
Baldwin	7–8	roc	yr	m	5–6	vl	km	Mass	**	*	**					*	**	*							*
Baltimore	5–6	rc	yrs	m	5–6	vl	dm	Am.?		*									*						

[1] Includes such possible hybrids as strongly manifest Crab parentage.

Section 1.—APPLES. (Pyrus.)—Continued.

Subsection 2.—APPLES. (*P. MALUS.*)—Continued.

Name.	Description.								Districts and starring.																
	Size.	Form.	Color.	Flavor.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Belmont	8-9	rc	yr	m	9	l	d	Pa	..	*	..	*	..	..	..	*	*	..	..	..	..	..	..
Ben Davis	6-9	rov	yrs	m	4	l	m	Ky.?.	..	..	**	**	..	..	..	**	**	—	..	*	..	..	**
Benoni	4-5	ro	yrs	m	7	e	d	Mass	..	*	*	**	..	..	*	*	**	..	..	*	..	..	..
Bentley	5-6	ro	ygr	s	5-6	vl	k	Va	..	**	..	*	..	..	..	..	..	..	..	..	..	..	..
Bethlehemite	5-6	oc	yrs	m	5-6	vl	dkm	Ohio.?	..	†	..	*	..	..	..	..	..	..	..	..	..	..	..
Bevan	5-6	oc	yrs	m	4	e	dm	N. J	..	†	..	*	..	..	..	..	..	..	..	..	..	..	..
Bietigheimer	10	oc	wyr	m	4	em	m	Ger	..	*	..	..	..	..	..	..	..	—	..	..	..	..	*
Black, *Jersey*	5-6	ro	r	m	4	l	d	N. J	..	*	..	*	..	..	..	*	*	..	..	..	..	..	..
Blenheim	8-9	roc	yrs	ma	4	ml	km	Eng	..	**	..	..	..	..	..	..	*	..	..	..	..	..	..
Blue Pearmain	9	re	rs	m	6	l	dm	Am. ?.	..	**	..	..	..	..	..	..	*	..	..	..	..	..	*
Bonum	5-6	o	yr	m	6	ml	d	N. C	..	*	*	**	..	..	*	..	..	..	..	..	..	..	..
Borovinka	6	rob	yrs	ma	7	em	km	Rus	..	..	..	..	..	..	..	..	..	*	..	..	..	..	..
Bough, *Sweet*	8	y	ov	s	8	e	d	Am	..	**	*	*	..	*	*	*	*	..	..	..	..	..	*
Bradford *Best (Kentucky Red)*	5-6	rc	yrs	m	4	l	dm	Tenn.?	..	*	..	**	..	..	*	..	*	..	..	..	..	..	..
Broadwell	6	oc	yr	s	7	l	dk	Ohio	..	*	..	..	..	..	..	**	*	..	..	..	..	..	*
Bruce	7-8	.....	.....	.....	.....	em	.....	Am	..	..	..	..	**	..	**	..	..	..	..	..	..	..	*
Buckingham	6-8	oc	gyr	m	7-9	l	km	Va	..	*	**	**	**	..	**	..	**	..	..	..	..	..	..
Buffington	4-5	o	wyr	m	5-6	e	dk	Pa	..	*	..	..	..	..	*	..	**	..	..	..	..	..	..
Bullock (*American Golden Russet*)	4	rov	yru	m	8-9	l	d	N. J.?.	..	*	*	..	..	..	..	*	*	..	..	..	..	*	..
Buncombe (*Red Winter Pearmain*)	5-6	robe	wyr	m	4-5	l	dm	N. C	..	..	..	*	*	..	*	..	*	..	..	..	..	..	..
Camack	5-6	rc	ygr	s	4	l	dk	N. C	..	..	..	..	*	..	**	..	..	..	..	..	..	..	..
Camptield	5-6	rc	gyr	s	3	vl	e	N. J	..	*	*	..	..	..	..	*	..	..	..	..	..	..	..
Canada Reinette	10	oci	yrru	m	7-8	l	dm	Fr.?	*	*	..	*	..	..	..	..	..	..	..	..	..	..	..
Cannon *Pearmain*	5-6	rc	yrs	m	5-6	l	dm	N. C	..	..	..	**	..	..	..	..	*	..	..	..	..	†	..
Carter Blue	8-9	ro	gr	m	5-6	m	d	Ala	..	..	..	..	**	..	**	..	..	..	..	..	..	..	..
Champlain (*Nyack*)	7	robe	yr	m	5-6	em	dm	N. Y.?.	..	**	..	..	..	..	*	..	..	..	..	..	..	..	*
Chenango	6-7	obe	yr	m	8	e	dm	N. Y	..	**	..	**	..	..	*	..	*	..	..	*	..	..	..
Clark Pearmain	5-6	roc	gyr	m	5-6	m	dm	N. C	..	..	..	*	*	..	*	..	..	..	..	..	..	..	..
Clayton	8	oc	yrs	m	4	l	k	Ind	..	*	..	..	..	..	..	*	**	..	..	..	..	..	..
Clyde *Beauty*	8	rci	gr	m	4	l	m	N. Y	..	*	..	..	..	..	..	..	*	..	..	..	..	..	..
Cogswell	7-8	ro	yr	m	7	l	dm	Conn	..	*	..	..	..	..	..	*	*	..	..	..	..	..	..
Colvert	9	oc	yr	m	4	m	m	Am. ?.	..	*	..	..	..	..	..	*	*	..	..	..	..	..	..
Cooper	8	roi	yrs	m	4	m	m	Am. ?.	..	*	..	*	..	..	..	..	*	..	..	..	..	..	..
Cooper Market	5-6	oc	yrs	m	4	l	m	N. J	..	**	*	..	..	..	..	..	..	..	..	..	..	..	*
Cornell *Fancy*	5	obe	yrs	m	6-7	em	d	Pa	..	*	*	..	..	..	..	*	..	..	..	..	..	..	..
Cracking	9	roc	yr	m	4	m	k	Ohio	..	..	..	*	..	..	..	*	*	..	..	..	..	..	..
Cullasaga	6-7	rc	yr	m	4	l	m	N. C	..	..	*	..	*	..	..	*	*	..	..	..	..	..	..
Danvers *Sweet*	5-6	rob	yr	s	5-6	l	km	Mass	..	*	*	..	..	..	..	..	*	..	..	*	..	..	..
Disharoon	5-6	rc	gw	m	4	m	d	Ga	..	..	..	..	*	..	..	*	*	..	..	..	..	..	..
Domine	5-6	o	gyr	m	5	l	m	N. Y.?.	..	*	*	..	..	..	..	*	*	..	..	..	..	..	..
Drap d'Or	8	ro	y	m	5	m	d	Eur	..	*	*	..	..	..	..	*	..	*	..	*	..	..	..
Dutch Mignonne	5-6	roc	yr	m	4-5	l	dk	Holl	..	*	..	..	..	*	..	..	..	..	..	*	..	*	*
Dyer (*Pomme Royal*)	5-6	r	yr	m	9-10	em	d	Fr.?	..	**	..	..	..	..	..	**	*	**	..	..	*	..	*	..
Early Cooper	5-6	ro	yr	m	5	e	m	Am	..	*	..	..	..	..	..	*	..	..	..	..	..	..	*
Early Harvest	5-6	ro	ywr	ma	9	ve	dk	Am	*	**	*	**	*	*	*	*	**	..	..	*	..	*	*
Early Joe	3-4	oc	yrs	m	10	e	d	N. Y	..	**	..	**	*	..	*	*	*	..	..	..	..	..	..
Early Pennock	7-8	rci	yr	m	4	e	d	Am.?.	..	*	..	..	..	..	..	*	**	..	..	*	..	*	..
Early Ripe	5-6	ro	y	m	3-4	e	dm	Pa	..	*	*	..	..	..	..	*	..	..	..	..	..	..	..
Early Strawberry	4	rc	yrs	m	6-7	e	dm	N. Y	..	*	*	*	*	*	*	*	..	..	..	..	..	**	..
Edward *Early*	.....	.....	.....	.....	.....	.....	.....	.....	..	*	*	..	..	..	..	..	..	..	..	..	..	..	..
English Russet	5-6	rc	yrru	m	5-6	vl	m	?	..	*	*	..	..	..	..	*	..	..	..	*	..	..	..
Esopus	8	obe	r	m	10	l	d	N. Y	..	**	—	..	..	..	..	*	*	*	..	*	..	..	**
Evening Party	4-5	o	yrs	m	5-6	l	d	Pa	..	*	..	..	..	..	..	..	*	..	..	..	..	..	..
Ewalt	8	rc	yr	m	4-5	l	k	Pa	..	*	..	..	..	..	..	..	*	..	..	..	..	..	..
Fallawater	10	rc	ygr	m	4	l	m	Pa	..	*	**	..	..	..	..	*	*	..	..	*	..	..	*
Fall Harvey	8-9	roi	yr	m	4-5	m	dk	Mass	..	*	*	..	..	..	..	*	..	..	..	..	..	..	*
Fall Jenneting	8-9	oci	yr	m	3-4	m	m	Conn	..	*	..	..	..	..	..	*	*	..	..	*	..	*	..
Fall Orange	8-9	r	yr	ma	3-4	m	k	Mass	..	*	..	*	..	..	..	*	**	*	..	..	..	*	..
Fall Pippin	10	roc	yr	m	10	m	dk	Am	..	*	*	**	*	..	..	*	..	*	..	*	..	..	**
Fall Wine	7-8	ro	yrs	m	7-8	m	d	Am.?.	*	*	*	*	..	..	..	*	*	—	*	*	*	*	*
Famense	5-6	ro	yrs	m	8-9	m	dm	Fr.?	*	*	..	*	..	..	..	*	**	*	*	**	..	*	*
Family	5-6	oc	yrs	m	5-6	em	d	Ga	..	..	..	..	*	..	..	*	..	..	..	..	..	..	..
Fanny	8-9	roc	rs	m	5-6	e	m	Pa	..	*	**	*	..	..	..	..	..	..	..	..	..	..	..
Farrar (*Robinson Superb*)	8-9	.....	.....	m	4	e	dm	Va	..	..	*	..	..	..	..	*	..	..	..	..	..	..	..
Ferdinand	8-9	o	y	m	4	l	d	S. C	..	..	..	..	*	..	..	*	..	..	..	..	..	..	..
Fink	3-4	o	wyr	m	4-5	vl	m	Ohio	..	*	..	..	..	..	..	..	*	..	..	..	..	..	..
Fulton	5-6	o	yr	m	4-5	l	m	Ill	..	*	..	..	..	..	..	*	*	..	..	..	..	..	..
Gabriel	5-6	ro	wgr	m	4-5	m	d	?	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Gano	7-8	oi	yrs	m	5	ml	m	Mo	..	..	..	*	..	..	*	..	**	..	..	..	..	..	..

Section 1.—APPLES. (Pyrus.)—Continued.

SUBSECTION 2.—APPLES. (*P. MALUS.*)—Continued.

Name.	Description.								Districts and starring.																
	Size.	Form.	Color.	Flavor.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Garden Royal	4–5	roc	yrs	m	10	e	d	Mass	..	**	..	..	..	..	..	..	..	..	..	..	..	..	..
Garrettson	5–6	re	y	m	4	e	k	N. J	..	*	..	..	..	..	**	..	..	..	..	..	..	..	..
Gideon	5–6	re	y	a	5	e	k	Minn	..	†	..	..	..	..	..	..	..	..	..	..	..	..	..
Gilpin	5–6	rob	ry	ma	4	vl	kc	Va	*	*	*	..	..	..	*	..	..	..	*	..	..	..	..
Golden Russet (N. Y.)	4–6	ro	yru	m	5–6	l	dm	Eng	..	*	*	..	..	..	*	..	..	..	..	..	..	..	..
Golden Sweet	5–7	ro	y	s	4–6	e	dk	Conn	..	**	..	*	..	..	*	..	..	..	..	..	..	..	..
Golding (*American Golden Pippin*)	6–8	roc	yr	m	5–6	m	dk	Am	..	*	..	..	..	..	..	*	*	..	..	..	..	..	..
Gravenstein	8–9	oi	yr	ma	5–6	em	dkm	Ger	..	*	..	*	..	..	..	*	*	..	..	..	..	..	*
Gravenstein, Russian	8	c	rs	.....	9	e	dm	Rus	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Green Cheese	5–6	oi	gy	m	3–4	l	km	Tenn	..	..	..	*	..	..	..	..	..	..	..	..	..	..	..
Green Newtown	5–6	ri	ygr	ma	10	vl	dkm	N. Y	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Green Sweet	5–6	roc	gy	s	4	l	k	Mass	..	*	..	..	..	..	..	..	*	..	..	..	..	..	..
Grimes *Golden*	5–6	roc	y	m	7–9	l	d	Va	..	*	..	..	..	..	..	..	..	..	..	..	..	..	*
Grosh (*Western Beauty* (?))	9–10	ro	yrs	m	4–6	l	m	Pa	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Haas (*Fall Queen*)	5–7	oc	gyr	m	4–6	em	km	Mo	..	*	..	*	..	..	..	..	..	..	..	..	..	..	..
Hall	3–4	oc	r	m	5–6	l	d	N. C	..	*	..	..	..	..	*	..	..	..	..	..	..	..	..
Hartford *Sweet*	5–7	ro	ygr	s	4	vl	km	Conn	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Hawthornden	5–7	ro	yr	a	3–4	e	km	Scot	..	*	..	..	..	..	..	..	*	..	..	..	..	..	*
Hewes *Crab*	3	r	rgy	a	2	m	c	Va	..	..	..	..	..	..	*	..	..	..	..	..	..	..	*
Hibernal	5–7	obc	rs	.....	5	m	km	Rus	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Higby	5–6	re	yr	s	7–8	ml	dk	Ohio	..	†	..	†	..	..	..	..	..	..	..	..	..	..	..
Hightop *Sweet*	4–6	r	y	s	5–6	e	d	Mass	..	*	..	*	..	..	*	..	*	*	*	..	..	..	*
Hockett	5–6	ro	yrs	s	3–4	l	m	N. C	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Holland *Pippin*	10	ro	yr	m	4	em	k	?	..	*	..	..	..	..	..	*	..	..	..	..	..	*	..
Hoover	5–6	ro	yrs	m	5–6	l	km	S. C	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Horn	4–6	o	yrs	m	3–4	l	m	Ga	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Horse	7–8	r	yrru	m	3–4	e	c	N. C	..	*	..	*	*	*	..	*	..	..	..	..	..	..	..
Hubbardston	7–8	rov	yrs	m	8–9	l	dm	Mass	..	*	..	..	..	..	..	*	..	..	..	..	..	..	*
Hunt *Russet*	4–6	roc	yrur	m	7–8	l	d	Mass	..	*	..	..	..	*	..	..	†	..	..	..	..	..	..
Huntsman	8–9	oc	yr	m	5–6	l	dm	Mo	..	..	..	..	..	..	..	..	*	..	..	..	..	..	..
Hurlbut	5–6	oci	yrs	m	4–6	ml	dm	Conn	..	*	..	..	..	..	..	*	..	..	..	..	..	..	..
Jefferis	5–6	oc	yrs	m	8–9	e	d	Pa	..	*	..	*	..	..	..	*	..	..	..	..	..	..	..
Jefferson County	5–6	roc	yrs	m	4–6	m	d	N. Y	..	*	..	..	..	..	..	*	..	..	..	..	..	..	..
Jennings	8–9	o	g	.....	3–4	e	d	Ohio	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Jersey Sweet	5–6	roc	yrs	s	8	em	dk	N. J	..	*	*	*	..	..	..	*	..	..	..	..	..	..	*
Jewett *Red*	5–6	ro	grs	m	4–6	l	d	N. H	..	*	..	..	..	..	..	*	..	*	..	..	..	..	..
Jonathan	5–6	re	yr	m	8–9	l	dkm	N. Y	..	*	*	..	..	..	..	*	*	..	*	..	..	..	..
Julian	6–7	re	wrs	m	4–6	e	d	N. C	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
July (*Fourth of July*)	4–6	roc	wyr	m	3–4	ve	cm	Ger	..	*	..	..	..	..	*	†	*	—	..	..	..	..	..
Junaluskee	5–6	ro	y	m	4–6	l	d	N. C	..	..	..	*	..	..	*	..	..	..	..	..	..	..	..
Kent Beauty	10	ro	gyr	m	3–4	m	k	Eng	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Keswick	6–7	ci	gyr	a	5–6	em	k	Eng	..	*	..	*	..	..	..	*	*	..	..	..	..	..	*
Kinnaird	5–6	oci	yr	m	5–6	l	dk	Tenn	..	*	..	*	..	..	..	*	*	..	..	..	..	..	..
Kirkbridge	4–5	obi	yw	m	3–4	e	dk	Am.?	..	*	..	..	..	..	..	*	..	..	..	..	..	..	..
Lady	1–2	o	yr	m	6–7	l	dm	Fr	..	*	..	..	..	..	..	*	..	..	..	..	..	..	..
Lady Sweet	7–8	rov	ygr	s	6–8	l	dk	N. Y	..	*	..	..	..	..	..	*	..	*	..	..	..	..	*
Lansingburg	5–6	ro	yr	m	3–4	vl	m	N. Y	..	*	*	**	..	..	..	*	..	*	..	..	..	..	..
Late Strawberry	5–6	re	wrs	m	5–6	m	d	N. Y	..	*	*	**	..	..	..	**	..	**	—	..	..	..	..
Lawver (*Delaware Red Winter*)	7–8	ro	r	m	5–6	vl	dm	Mo	..	*	*	..	..	..	..	†	†	..	..	*	..	..	..
Limber Twig	6–7	roc	gyr	m	3–4	vl	m	N. C.?	..	*	*	*	..	..	..	*	*	..	..	..	..	..	..
Longfield	5–6	re	y	m	5–6	e	k	Rus	..	*	..	..	..	..	..	..	†	*	..	..	..	..	..
Long Island *Russet*	3–4	r	yru	m	3–4	ml	c	N. Y	..	..	*	..	..	..	..	..	..	..	..	..	..	..	..
Loudoun	7–8	oc	yr	m	4–6	ml	d	Va	..	*	*	..	†	..	..	*	..	..	..	..	..	..	..
Lowell	8–9	ob	y	m	6–7	e	km	Am	..	*	..	..	..	..	..	*	*	*	..	..	..	..	..
Lyscom	8–9	r	gyr	m	4–6	em	d	Mass	..	*	..	..	..	..	..	*	..	..	..	..	..	..	..
McAfee	7–8	ro	ygr	m	4–6	vl	m	Ky	..	*	*	**	..	..	*	*	*	..	..	..	..	..	*
McIntosh	6–7	ro	wyr	m	5–6	ml	dm	Ont	..	*	..	..	..	..	..	..	*	**	..	..	..	..	..
McLellan	5–7	roc	yrs	m	5–6	m	d	Conn	..	*	*	..	..	..	..	..	..	..	..	..	..	..	..
McMahon	7–8	ro	yw	m	3–4	m	dm	Wis	..	..	..	..	..	..	..	*	**	..	..	..	..	..	..
Maiden Blush	5–6	o	yr	m	4–6	e	km	N. J	..	**	*	**	**	..	..	*	*	*	*	..	..	..	*
Mangum	5–6	oc	yrs	m	6–8	m	d	Ala	..	..	*	*	*	..	..	*	..	*	..	..	..	..	*
Mann	6–7	ro	yr	m	4–6	l	mk	N. Y	..	*	..	..	..	..	..	*	..	*	..	†	..	..	*
Manomet	5–6	ro	yr	s	5–6	e	kd	Mass	..	*	..	..	..	..	..	*	..	..	..	..	..	..	..
Margaret, *Early Red*	5–6	ro	yr	m	3–4	e	d	Eng	..	*	*	**	*	..	..	*	*	..	*	..	..	..	..
Mason Stranger	5–6	o	yr	m	5–6	l	d	Va	..	..	**	..	*	..	†	..	..	..	..	..	..	..	..
Mattamuskeet	5–6	roc	yr	m	3–4	l	k	N. C	..	..	*	..	*	..	*	..	..	..	..	..	..	..	..

Section 1.—APPLES. (Pyrus.)—Continued.

SUBSECTION 2.—APPLES. (*P. MALUS.*)—Continued.

Name.	Description.								Districts and starring.														
	Size.	Form.	Color.	Flavor.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Maverack	7–8	ro	yr	s	4–6	l	mk	S. C.	..	..	..	..	*	..	*	..	..	..	..	..	..	..	..
Melon, *Norton*	6–7	roc	yrs	m	10	l	dm	N. Y.	*	..	..	..	..	..	..	*	..	..	..	..	..	..	..
Minister	7–8	oc	yrs	m	3–5	ml	dm	Mass	..	..	..	..	..	..	*	..	..	..	..	..	..	..	..
Minkler	5–6	rc	gyr	m	6–8	l	m	Pa	..	..	..	..	..	..	..	..	**	..	..	..	..	..	..
Missouri *Pippin*	6–8	ro	yrs	m	3–4	l	m	Mo	..	..	†	..	*	..	*	..	..	..	..	**	..	..	*
Monmouth	7–8	oc	yr	m	6–8	l	dm	N. J	..	..	..	..	..	..	..	..	*	..	..	..	..	..	..
Moore Sweet	5–6	ro	r	s	3–4	l	k	Am. ?	*	*	*	..	..	..	*	..	..	..	..	..	..	..	..
Mother	5–6	rc	yr	m	8–9	ml	d	Mass	..	*	..	**	..	*	*	..	**	..	..	..	..	*	*
Munson	5–6	o	yr	s	5–6	ml	k	Mass	..	..	..	*	..	..	..	..	..	..	..	..	..	..	..
Nansemond	5–6	roc	yrs	m	.....	l	dk	Va. ?	..	..	..	*	*	..	..	..	..	..	..	..	..	..	..
Newtown Spitzenburg	5–6	oc	yrs	m	10	l	d	N. Y.	..	*	..	..	..	..	*	*	..	..	..	..	..	*	..
Nickajack	8–9	oc	yrs	m	5–6	l	m	N. C.	..	*	*	*	..	..	..	†	..	..	..	..	..	*	*
Northern Spy	8–9	roc	yrs	m	8–9	ml	dkm	N. Y.	**	*	..	..	..	..	..	..	..	..	*	*	..	*	**
Northwestern *Greening*	8–9	rc	gy	m	6	l	km	Wis	..	..	..	..	..	..	..	..	..	**	..	..	..	..	..
Oconee	8–9	ro	yr	m	4–5	m	dk	Ga	..	*	..	**	**	..	**	..	..	..	..	..	..	..	..
Ohio Nonpareil	7–8	r	yr	m	5–6	m	dm	Ohio	..	*	..	..	..	..	..	*	*	..	..	..	..	..	..
Ohio Pippin	8–9	ro	yr	a	5–6	ml	k	Ohio?	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Oldenburg, *Duchess of*	5–6	o	yrs	a	4–5	e	km	Rus	..	*	..	..	*	..	..	**	**	**	..	**	..	**	**
Ontario	5	ob	wyr	.....	6	l	.....	Ont	..	**	..	..	..	..	..	..	..	..	..	..	..	..	..
Orange Pippin	5–6	r	y	a	2–3	ml	c	Fr	..	..	*	..	..	..	..	*	..	..	..	..	..	..	..
Ortley	7–8	robc	gyr	m	6–7	ml	dm	N. J	..	*	..	*	..	..	..	*	**	..	..	..	..	..	*
Otoe	5–6	ros	yrs	m	6–7	l	dm	Nebr	..	..	*	..	..	..	..	..	*	..	..	..	..	..	..
Paragon	10	rc	yr	m	8–9	l	dm	Tenn	..	..	..	**	..	..	..	..	..	..	..	..	..	..	..
Peach *Montreal*	5–6	rc	yrs	m	5–6	l	dn.	Fr	..	*	..	..	..	..	..	..	..	**	..	..	..	..	..
Peach Pond	5–6	o	yrs	s	5–6	em	dk	N. Y.	..	*	..	..	..	..	..	*	*	..	..	..	..	..	..
Peck *Pleasant*	7–8	ro	yr	m	8–9	l	dkm	R. I.	..	..	..	..	..	..	..	..	..	..	..	..	..	**	..
Perry Russet	5–6	rc	yru	m	5–6	ml	dk	N. Y.	..	*	*	..	..	..	..	**	..	*	*	..	..	..	..
Pewaukee	7–8	ro	yrs	m	5–6	l	km	Wis	*	**	..	..	..	..	..	*	..	*	*	..	..	..	..
Pleasant Valley	5–6	rc	gyr	m	6–7	m	d	N. J. ?	..	*	*	..	..	..	..	..	..	..	..	..	..	..	..
Plumb *Cider*	5–6	rc	yrs	m	5–6	m	dm	Wis. ?	..	..	..	..	..	..	..	..	..	**	*	..	*	..	..
Pomme Gris	3–4	ro	grur	m	8–9	ml	d	Eur. ?	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Porter	7–8	obc	yr	m	8–9	em	dm	Mass	..	*	..	**	..	..	..	..	*	*	..	..	*	..	..
President	8–9	ro	yr	m	5–6	em	m	N. H.	..	*	*	..	..	..	..	..	..	..	..	..	..	..	..
Primate	5–6	rc	yr	m	9	e	d	N. Y.	..	..	*	..	..	..	..	*	..	*	..	*	..	*	..
Pryor *Red*	5–6	o	gyr	m	7–8	l	dk	Va. ?	..	..	..	**	**	..	..	..	*	..	..	..	..	..	..
Pumpkin Sweet (*Pound Sweet*)	10	r	gw	s	5–6	ml	k	Conn	*	*	..	*	..	..	..	..	..	*	..	..	..	..	..
Quince, *Cole*	7–8	ro	y	a	5–6	e	k	Me	..	*	..	..	..	..	..	..	..	*	..	..	..	..	..
Ralls *Genet*	7–8	oc	yrs	m	6–7	vl	m	Fr	..	*	..	*	*	..	..	*	*	..	*	..	..	*	*
Rambo	5–6	o	wyr	m	5–6	m	dk	Pa	..	*	..	..	..	..	..	..	**	..	..	..	..	*	*
Ramsdell *Sweet*	7–8	obc	r	s	6–7	m	km	Am	..	*	**	..	*	..	..	..	*	..	..	..	..	..	..
Red Astrachan	7–8	rc	rgy	a	5–6	e	km	Russ	*	*	*	*	**	..	..	..	..	..	..	..	..	*	*
Red Canada	5–6	oc	yr	m	8–9	l	dm	Am	..	..	*	..	**	..	..	..	**	..	..	..	..	..	*
Red June	3–4	ovc	r	m	5–6	ve	d	N. C. ?	..	..	..	..	*	..	..	*	..	..	..	..	..	..	..
Red Stripe	5–6	obc	wr	m	5–6	e	km	Ind	..	..	..	..	*	..	..	*	..	—	..	..	..	..	..
Rhode Island *Greening*	8–9	ro	gy	a	7	l	dkm	R. I. ?	*	**	*	*	..	..	..	**	..	..	..	*	..	*	*
Ribston	5–6	r	yr	a	7	l	dk	Eng	..	*	*	..	..	..	..	..	..	..	..	..	..	..	*
Ridge *Pippin*	7–8	rci	yru	m	5–6	l	m	Pa. ?	..	*	..	†	..	..	..	*	..	..	..	..	..	..	..
Robertson White	5–6	ro	gy	m	5–6	m	d	Va	..	..	*	..	..	..	..	..	..	..	..	..	..	..	..
Rolfe	8	o	yrs	m	8	m	dkm	Me	**	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Romanite *South*	2–3	rc	yr	m	6–7	l	d	Am. ?	..	..	..	..	**	..	..	*	..	..	..	..	..	..	..
Roman Stem	3–4	r	wyr	m	7	l	dk	N. J	..	*	*	..	*	..	..	*	*	**	*	..	**	..	..
Rome *Beauty*	8–9	rc	yrs	m	5–6	ml	dkm	Ohio	..	*	*	**	*	..	..	*	*	..	..	..	**	..	*
Roxbury	5–6	ro	yru	m	7–8	l	km	Mass	..	**	*	**	*	..	..	*	..	..	..	..	*	..	*
Russell	.....	rov	yr	.....	10	e	d	Am	..	**	..	..	..	..	..	..	..	..	..	..	..	..	..
Saint Lawrence	8–9	oc	yrs	m	6–7	m	dm	Am	..	*	..	..	..	..	..	..	*	..	..	*	..	..	..
Scott Winter	5	rc	rs	a	7	l	km	Vt	*	..	..	..	..	..	..	..	..	..	*	..	..	..	..
Shiawassee	5–6	o	wrs	m	7–8	m	dkm	Mich	..	**	..	..	..	..	..	*	..	..	..	..	..	..	..
Shockley	3–4	rc	yr	m	5–6	l	dm	Ga	..	..	**	*	*	..	..	**	..	*	..	..	..	..	..
Smith *Cider*	7–8	roc	yr	m	5–6	l	km	Pa	..	*	**	**	..	..	..	*	**	..	..	..	..	*	..
Smokehouse	6–7	ro	yr	m	5–6	ml	k	Pa	..	**	**	..	..	*	..	*	..	..	..	..	..	..	*
Sops of Wine	5–6	r	yr	m	5–6	e	d	Eur	*	*	**	*	**	..	..	**	**	*	..	*	..	..	..
Stark	8–9	robc	yrs	m	5–6	l	m	Ohio?	..	*	*	..	..	..	..	..	*	..	..	..	..	..	..
Starkey	7–8	ocr	yrs	m	8	ml	dkm	Me	..	**	..	..	..	..	..	..	..	..	..	..	..	..	..
Stephenson	5–6	rob	yrs	m	5–6	l	dm	Miss	..	*	*	*	*	..	..	**	*	*	..	..	..	..	..
Sterling (*American Beauty*)	8–9	rc	yr	m	7–8	l	d	Mass	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Stott *Russet*	.....	.....	.....	.....	.....	.....	.....	Ont	..	**	..	..	..	..	..	..	..	..	..	..	..	..	..
Striped Pippin	7–8	rob	rs	m	5	m	km	Am	..	..	..	..	..	..	..	..	*	..	..	..	..	..	..
Summer King	7–8	ro	yrs	m	5–6	e	dk	N. C. ?	..	..	..	..	**	..	..	*	..	†	..	..	..	..	..
Summer Paradise	8–9	r	gy	s	6–7	e	k	Pa	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..

Section 1.—APPLES. (Pyrus.)—Continued.

SUBSECTION 2.—APPLES. (*P. MALUS.*)—Continued.

Name.	Description.								Districts and starring.														
	Size.	Form.	Color.	Flavor.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Summer Pearmain	5–6	oc	rru	m	10	em	d	Am.	..	*	**	*	..	..	*	..	..	..	..	..	..	*	..
Summer Pound	8–9	re	gw	m	6–7	e	m	Am.?	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Summer Queen	7–8	re	yrs	a	5–6	e	km	Am.	..	*	*	**	**	..	*	..	..	..	..	*	..	..	..
Summer Rose	4–5	r	yrs	m	8–9	ve	d	N. J.	..	*	..	*	..	..	..	..	*	..	..	*	..	..	..
Sutton	6–7	roc	yrs	m	5–6	l	dm	Mass.	..	..	..	..	..	..	..	..	*	..	..	..	..	..	..
Swaar	7–8	ro	gy	m	10	l	d	N. Y.	..	**	..	..	..	..	..	..	..	..	..	..	..	*	..
Sweet Belle *Bonne*	6–7	roc	gyr	s	5–6	m	k	Am.	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Sweet Winesap	5–6	oc	r	s	6–7	l	dk	Pa.	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Switzer	5–6	r	wr	m	7–8	e	k	Rus.	..	..	..	..	*	..	..	..	..	**	..	..	..	..	..
Taunton	7–8	oc	yrs	a	5–6	m	k	(Ala. Ga.)	..	*	..	..	**	..	*	..	..	..	..	..	..	..	..
Tetofski	5–6	roc	yrs	a	5–6	e	m	Rus.	..	*	*	..	..	..	..	..	*	..	..	..	..	..	..
Titovka	7–8	oci	yrs	m	5–6	e	km	Rus.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tolman *Sweet*	5–6	ro	yr	s	6–7	l	km	R. I.	..	*	*	..	..	..	..	..	*	*	..	..	..	..	..
Tompkins King	8–9	roc	yrs	m	8–9	l	dcm	N. J.	..	*	..	..	..	..	..	..	*	..	..	*	..	..	*
Townsend	5–6	oc	yrs	m	6–7	e	dm	Pa.	..	*	..	*	..	..	..	..	..	..	..	..	..	..	..
Trenton Early	6–7	ci	yg	m	5–6	e	km	Am.	..	*	..	..	..	..	*	..	..	..	..	..	..	..	..
Twenty Ounce	10	r	yrs	m	6–7	ml	km	Conn.	..	..	..	..	..	..	..	..	*	..	..	..	..	..	..
Vandevere	5–6	o	yrs	m	5–6	ml	km	Del.	..	*	..	*	..	..	..	..	..	..	..	..	..	..	..
Virginia Greening	8–9	o	gyr	m	5–6	l	m	Am.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wagener	6–7	ro	yrs	m	8–9	l	dm	N. Y.	..	*	..	..	..	..	..	..	..	..	†	..	..	..	..
Walbridge (*Edgar Red Streak*)	5–6	oc	yrs	m	5–6	l	m	Ill.	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Washington *Strawberry*	8–9	oc	yrs	m	7–8	e	dm	N. Y.	..	**	..	..	..	..	..	..	..	..	..	..	..	..	..
Watson, *Carolina*	8–9	oc	grs	m	5–6	e	d	Am.	..	..	..	..	..	..	*	..	..	..	..	..	..	..	..
Waugh *Crab*	2–3	re	r	m	5–6	l	c	Va.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wealthy	5–6	ro	yrs	m	6	m	dkm	Minn.	..	**	..	..	..	..	..	..	..	..	..	..	..	..	*
Westfield	7–8	re	gr	m	8–9	ml	dm	Conn.	..	*	*	..	..	..	..	..	..	..	..	..	..	..	..
White Juneating	2–3	ro	yr	m	5–6	e	d	Eng.	..	*	*	**	..	..	*	..	..	..	..	..	..	..	..
White Paradise	5–6	obre	yr	a	3–4	m	k	Scot.	..	..	..	*	..	..	..	..	..	..	..	..	..	..	..
White Pearmain	7–8	robe	yr	m	5–6	l	dm	Am.?	..	..	..	*	..	..	*	..	*	..	..	..	..	*	*
White Pippin	8–9	ro	wyr	m	8–9	l	dm	Am.	..	*	..	*	..	..	..	..	..	..	..	..	..	..	..
White Rambo	5–6	oc	yw	m	5–6	m	d	Pa.	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Williams *Favorite*	5–6	robe	r	m	5–6	e	dm	Mass.	..	**	*	..	*	..	*	..	*	..	..	..	..	*	*
Willis	7–8	r	wr	s	5–6	e	dmk	N. Y.	..	*	..	..	..	..	*	..	..	..	..	..	..	..	..
Willow *Twig*	5–6	roc	yr	m	5–6	vl	m	Va.?	..	*	*	*	..	..	*	*	*	..	..	..	..	..	*
Windsor	5–6	r	yr	m	6	ml	m	Wis.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wine, *Hays*	6–7	ro	yr	m	6–7	l	dm	Del.	..	*	..	*	..	..	..	..	..	..	..	..	..	..	..
Winesap	5–6	rob	yr	a	7–8	l	dkm	N. J.	..	*	*	*	..	..	*	*	*	..	..	..	..	..	*
Wolf *River*	9–10	ro	wr	m	5–6	m	km	Wis.	..	*	..	..	..	..	..	..	*	..	..	..	..	..	*
Wythe	5–6	oc	wrs	m	5–6	l	dk	Ill.	..	..	..	..	..	..	..	..	*	..	..	..	..	..	..
Yates	2–3	oc	yrs	m	5–6	vl	m	Ga.	..	..	..	..	..	..	*	..	..	..	..	..	..	..	..
Yellow Bellflower	8–9	obc	yr	a	7–8	l	dkm	N. J.	..	*	..	*	..	..	..	..	..	..	..	..	..	*	..
Yellow June	3–4	ro	y	a	5–6	e	dk	Am.	..	..	..	..	*	..	..	..	..	..	..	..	..	..	..
Yellow Newtown (*Albemarle*)	8–9	ro	yr	a	10	vl	dkm	N. Y.	..	*	*	..	..	..	*	..	*	..	..	*	..	*	*
Yellow Transparent	6–7	re	y	a	7	e	km	Rus.	..	**	..	..	**	..	..	..	..	..	..	..	..	..	..
Yopp	8–9	re	gyr	m	5–6	m	dk	Ga.	..	..	..	..	..	..	*	..	..	..	..	..	..	..	..
York Imperial	8–9	o	yrs	m	5–6	l	dm	Pa.	..	**	**	**	..	..	*	..	..	..	..	..	..	..	*

Section 2.—APRICOTS. (Armeniaca vulgaris.)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: c, compressed; co, conical; o, oblate; ob, oblong; r, round. Color: o, orange; r, red; y, yellow. Pit and kernel: b, bitter; c, cling; f, free; i, impervious; p, pervious; s, sweet. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Afr., Africa; Eng., England; Eur., Europe; Fr., France.]

Name.	Description.								Districts and starring.																
	Size.	Form.	Color.	Pit and kernel.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Breda	3–4	ro	o	s	7–8	m	dm	Afr	..	*	*	*	*	..	**	*	**	..	..	*	..	*	..
Early Golden	2–3	r	o	f	7–8	e	d	N. Y	..	*	*	**	*	..	*	*	*	..	..	..	..	..	..
Hemskirke	8–9	ro	or	ib	10	ve	d	Eng	..	*	*	**	*	..	..	*	*	..	..	..	..	*	..
Large Early	5–6	obc	or	bf	7–8	e	d	Fr	..	**	*	..	..	..	..	*	**	..	..	*	..	*	..
Moorpark	8–9	r	or	pb	7–8	m	d	Eng	..	*	*	**	**	..	**	..	**	..	..	*	..	**	..
Musch	3–4	r	yor	s	7–8	e	d	Asia	..	..	..	..	..	..	**	..	..	..	..	..	..	*	..
Orange	5–6	or	or	cs	3–4	e	k	Eur.?	..	..	..	..	..	*	*	..	..	..	..	..	..	..	..
Peach	10	rcoc	yo	pb	7–8	m	d	Italy	..	*	*	**	..	..	..	*	*	..	..	..	..	**	..
Red Masculine	2–3	r	yor	b	3–4	e	d	Eur.?	..	*	*	..	..	..	..	..	..	..	..	..	..	*	..
Royal	7–8	roc	yor	i	7–8	ve	d	Fr	..	..	..	..	*	..	*	..	..	..	..	..	..	*	..
St. Ambroise	8–9	rc	yr	.....	7–8	l	d	Fr.?	..	*	..	..	..	..	**	..	..	..	..	..	..	*	..
Turkey	5–6	r	yo	is	7–8	l	d	Fr.?	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..

Section 3.—BLACKBERRIES AND DEWBERRIES. (Rubus.)

SUBSECTION 1.—BLACKBERRIES. (*R. VILLOSUS.*)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: c, conical; o, oblong; ov, oval; r round. Color: b, black. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l late. v, very. Use: d, dessert; k, kitchen; m. market. Abbreviations of names of places of origin: Am, America.]

Name.	Description.						Districts and starring.																		
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Agawam	8–9	ro	b	8–9	e	dm	Am	..	**	..	..	..	..	..	..	*	..	..	..	..	..	*
Briton, *Ancient*	3–4	oov	b	5	m	m	Wis.?	..	*	..	..	..	..	*	*	†	**	..	**	..	..	*
Barnard	8–9	oov	b	7–8	m	dm	Ia	..	*	..	..	..	..	..	..	†	..	..	..	..	..	..
Brunton	5–6	o	b	9–10	e	dm	Am	..	*	..	..	..	..	**	..	..	..	..	..	..	..	..
Dallas	.....	.....	.....	.....	.....	.....	Tex	..	..	..	..	..	..	*	..	..	..	..	..	..	..	..
Dorchester	5–6	oc	b	9–10	ml	km	Mass	..	*	*	*	..	..	*	..	..	..	..	..	..	*	*
Early Harvest	4–5	ro	b	10	e	dm	Ill	..	*	..	*	..	..	**	*	*	..	..	..	..	..	*
Erie	8–9	rov	b	5	m	m	Pa	..	..	..	*	..	..	*	..	*	..	..	..	..	..	*
Kittatinny	9	ro	b	8	ml	d	N. J	..	**	..	*	..	..	*	..	**	..	..	*	..	**	**
Lawton	9	ov	b	7	m	m	N. Y	..	*	..	*	..	..	*	..	**	..	..	*	..	..	**
Minnewaska	9	ov	b	6	m	dm	N. Y	..	*	..	..	..	..	..	..	*	..	..	..	..	..	..
Snyder	5–6	o	b	7	ml	dm	Ind	..	*	..	*	..	..	**	**	**	**	**	*	..	..	*
Stone	5	ro	b	7	l	d	Wis.?	..	*	..	..	..	..	..	..	**	*	**	†	..	..	**
Taylor	7–8	ro	b	8	l	d	Am	..	*	..	*	..	..	..	..	*	..	..	..	..	..	*
Triumph. *Western*	5	oov	b	6	l	d	Am	..	*	..	..	..	..	..	..	*	..	..	..	..	..	..
Wachusett	5	oov	b	7	e	d	Mass	..	*	..	*	..	..	*	..	..	..	..	..	..	..	..
Wilson	10	oov	b	5	m	m	N. J	..	*	..	*	*	..	*	*	..	..	..	..	**	..	**
Wilson, Jr.	10	oov	b	5	m	m	N. J	..	*	..	..	..	..	*	..	†	..	..	..	..	..	*

SUBSECTION 2.—DEWBERRIES. (*R. CANADENSIS.*)

Austin	10	eov	b	5–6	e	dm	Tex	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lucretia	10	oov	b	6	ve	dk	W. Va	..	**	..	..	..	**	**	..	*	†	..	..	..	..	..	*

Section 4.—CHERRIES. (Cerasus.)

Subsection 1.—HEARTS AND BIGARREAUS. (*C. AVIUM.*)

[Key.—Size, scale 1 to 10: 1, very small; 10, very large. Form: c, compressed; h, heart shaped; o, oblate; r, round. Color: a, amber; b, black; p, purple; r, red; y, yellow. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Eng., England; Eur., Europe; Fr., France; Ger., Germany; Ont., Ontario; Rus., Russia.]

Name.	Description.							Districts and starring.														
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Black Heart	6–7	hc	b	5–6	ve	dm	Eur.?															
Buttner, *Yellow*	5–6	r	y	3–4	m	d	Ger															
Coe *Transparent*	5–6	r	yr	10	e	d	Conn				*											*
Downer	5–6	rh	r	8–9	m	dm	Mass															
Eagle, *Black*	6–7	oh	b	6–7	m	dm	Eng															
Early Purple *Guigne*	3–4	rh	ph	6–7	ve	d	?															
Elton	8–9	h	yr	9	e	dm	Eng															*
Florence	8–9	rh	ar	7–8	l	d	Italy															
Hovey	8–9	h	yr	7–8	l	dm	Mass															
Knight *Early*	8–9	oh	b	7–8	e	d	Eng															*
Lewelling	8–9	rh	b	8–9	.....	dm	Oreg															*
Mezel	10	oh	rb	7–8	m	d	Eur															
Napoleon (*Royal Ann*)	8–9	h	yr	5–6	m	m	Eur															*
Red Jacket	8–9	oh	ra	5–6	e	m	Ohio															*
Rockport	8–9	oh	ra	8–9	m	dm	Ohio															
Schmidt	9–10	h	r	9–10	ve	dm	Eur															
Spanish, *Yellow*	10	oh	yr	10	em	d	Eur															
Tartarian, *Black*	10	h	b	10	em	dm	Rus															
Windsor	8	h	yr	7–8	l	dm	Ont															
Wood, *Governor*	8–9	rh	yr	7–8	em	dm	Ohio														*	*

Subsection 2.—DUKE AND MORELLO CHERRIES. (*C. VULGARIS.*)

Archduke	8–9	oh	r	7–8	em	dk	Eur																
Bessarabian	5–6	r	r	5	l	k	Rus																
Carnation	8–9	r	yr	4–5	em	k	Eur.?																*
Choisy, *Belle de*	6–7	r	ra	10	e	d	Fr																
Donna Maria	5–6	r	r	4–5	m	k	?																
Dyehouse	5–6	ro	r	5–6	ve	k	Ky																
Eugenie, *Empress*	7–8	r	ra	8–9	e	d	Fr																
Hortense, *Reine*	8–9	rh	r	7–8	ml	dm	Fr																
Late Duke	7–8	oh	r	6–7	l	k	Eng																
Late Kentish	5–6	r	r	4–5	lm	k	Am.?																
Lutovka	7–8	r	r	4–5	em	k	Rus																
Magnifique, *Belle*	7–8	rh	r	6–7	l	k	Fr																
Mayduke	6–7	rh	r	8–9	e	dk	Fr																
Montmorency Large	7–8	ro	r	7–8	em	km	Fr																
Montmorency Ord	7–8	r	r	7–8	em	km	Fr																
Morello, *Eng.* (*Wragg*)	6–7	rh	rb	5–6	l	km	Eng																
Olivet	7–8	r	r	6–7	e	dk	Fr																
Philippe, *Louis*	7–8	r	r	5–6	e	k	Fr																
Plumstone *Morello*	8–9	rh	r	5–6	m	k	Am.?																
Richmond	5–6	r	r	5–6	e	km	Eur																
Royal Duke	7–8	rh	r	5–6	e	k	Fr.?																

Section 5.—CURRANTS. (Ribes.)

SUBSECTION 1.—*R. NIGRUM.*

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: r, round. Color: b, black; r, red; w, white. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Eng., England: Eur., Europe; Fr., France; Ont., Ontario.]

Name.	Description.							Districts and starring.														
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Champion	8–9	r	b	5–6	em	km	Eng		**									*				*
English	5–6	r	b	4–5	m	km	Eng										*				**	
Lee	8–9	r	b	6–7	m	km	Am. ?		**							*	*		*			*
Naples	6–7	r	b	6–7	m	km	Eur		*					*		*	*				*	*
Saunders	7–8	r	b	6–7	m	km	Ont															
Wales, *Prince of*	7–8	r	b	6–7	m	km	Ont. ?		*													

SUBSECTION 2.—*R. RUBRUM.*

Albert, *Prince*	7–8	r	r	7–8	e	dm	Eur		*								**					
Cherry	10	r	r	5–6	m	m	Eur		*		*					*						*
Defiance		r	r						**													
Fay	10	r	r	5–6	m	m	N. Y		*		*	*				*	—					**
Holland, *Long Bunch*	5–6	r	r	4–5	em	km	Eur		*								*					
London *Red*	5–6	r	r	4–5	m	km	Eng		*							*	*					
Red Dutch	6–7	r	r	8–9	m	dm	Eur			*	*					*	**					*
Red Grape	5–6	r	r	7–8	m	km	Eur. ?		*							*						
Versaillaise	10	r	r	5–6		m	Fr		*		*					*	*					*
Victoria	6–7	r	r	5–6	m	m	Eng		*		*				*	*	**					*
White Dutch	6–7	r	w	10	m	d	Eur					*		**	**		*					*
White Gondouin	6–7	r	w	10	m	d	Eur															
White Grape	7–8	r	w	8–9	m	m	Eur					*		**	**		**					**
Wilder	8–9	r	r	7–8	m	m	N. Y		†								**					

Section 6.—GOOSEBERRIES (Ribes.)

SUBSECTION 1.—*R. GROSSULARIA.*[1]

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: o, oval; r, round. Color: g, green; r, red; w, white; y, yellow. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Eng., England; Ont., Ontario.]

Name	Description.							Districts and starring.														
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Chautauqua	8–9	ro	gg w	10	m	km	N. Y		*													**
Columbus	8–9	ro	gy	10	m	km	Am. ?		*		*						†					
Crown Bob	8–9	o	r	7–8	e	km	Eng				—								**			*
Industry	10	ro	r	6–7	e	km	Eng		*								†	—				*
Triumph	8–9	ro	g w	7–8	e	mk	Pa. ?										†					
Wellington	8–9	o	g w	5–6	e	mk	Eng															
Whitesmith	8–9	o	g	5–6	e	km	Eng		*										**			*

SUBSECTION 2.—*R. OXYACANTHOIDES; syn. HIRTELLUM.*[2]

Champion	5–6	ro	gy	5	e	km	Am		**													**
Downing	5–6	r	g	5–6	m	km	N. Y		*	*						*	**	**	**			*
Houghton	2–3	ro	r	10	m	dk	Mass		*	*	*			*	*	**	**		**	*		*
Pale Red	2–3	ro	r	10	m	dk	Am		*		*			*		**	**		*			
Pearl	5–6	r	g	10	m	dk	Ont		†													
Red Jacket	5–6	ro	r	8	e	km	Ont										†					
Smith	5–6	o	yg	9	e	k	Vt		*		*		*	†	*		**	*				*

[1] Includes American seedlings of this parentage.
[2] Includes apparent hybrids of this with other species.

Section 7.—GRAPES. (Vitis.)

Subsection 1.—*V. ÆSTIVALIS.*[1]

[Key.—Size, scale 1 to 10: 1, very small; 10, very large. Form: o, oval; r, round. Color: a, amber; b, black; g, green; r, red; w, white; y, yellow. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: d, dessert; m, market; w, wine. Abbreviations of names of places of origin: Am., America; Ont., Ontario.]

Name.	Description.							Districts and starring.														
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Cynthiana	2-3	r	b	7-8	e	w	Ark		*		*	*		**		*						
Norton *Virginia*	2-3	r	b	5-6	e	w	Va		—		**	**	**			**		*				

Subsection 2.—*V. BOURQUINIANA.*[1]

Delaware	2-3	r	r	10	m	dm	N. J.?		*	**	**	**	**	**	*	*	**	*				**
Elvicand		r	r	8-9	m	d	Tex		*					*								
Herbemont	2-3	r	b	7-8	l	dw	South?		*	*	*	*	**	**	*	*		*				
Lenoir	2-3	r	rb	5-6	l	dm	N. C					*		*								
Walter	5-6	r	r	7-8	ml	d	N. Y		*		†	†		*		*		†				
Wylie, *Peter*	2-3	r	r	8-9	ve	d	S. C		*			**		*								

Subsection 3.—*V. LABRUSCA.*[1]

Agawam	8-9	ro	rb	6-7	m	dm	Mass		**	*			*	*	*	*						*
Barry	8-9	r	b	6-7	m	dm	Mass									*						
Brighton	7-8	r	r	10	e	d	N. Y															
Brilliant	5-6	r	r	5-6	e	dm	Tex		*		*		*		†							
Catawba	7-8	r	r	8-9	vl	dm	N. C		*			*			*			*				*
Champion	5-6	r	b	2-3	ve	m	Am		—													
Concord	6-7	r	b	5-6	m	m	Mass		*			*	**		*			**				*
Cottage	7-8	r	b	5-6	m	m	Mass															
Creveling	5-6	ro	b	7-8	em	d	Pa		*	*		*		*								
Diamond, *Moore*	5-6	r	gw	7-8	m	dm	N. Y					*										
Diana	5-6	ro	r	7-8	m	d	Mass			*		*		**	*							*
Duchess	4-5	ro	gy	7-8	m	d	N. Y		*		*											
Elvira	2-3	r	w	7-8	m	d	Mo		—			*		*								
Empire State	3-4	r	w	7-8	m	d	N. Y		*	†			*			*						
Ennelan	5-6	r	b	7-8	m	d	N. Y		*							†	*					
Glenfield	8-9	r	w	5-6	m	d	N. Y		*													
Goethe	10	o	ygr	7-8	l	d	Mass			*	**		*			**						
Hartford	7-8	r	b	4-5	e	m	Conn		—	*	*				*							
Hayes	5-6	r	yw	6-7	e	d	Mass		*						†							
Herbert	7-8	r	b	7-8	e	dm	Mass		*		*				†							
Iona	5-6	ro	r	10	m	dw	N. Y		*													*
Isabella	7-8	ro	b	7-8	m	dm	S. C		*		**											
Ives	5-6	ro	b	5-6	e	mw	Ohio		—	**	**	**	**									
Janesville	5-6	r	b	3-4	e	m	Wis.?		—								*		*			
Jefferson	5-6	r	r	7-8	ml	d	N. Y		*					*		†						
Lady	7-8	r	w	6-7	em	d	Ohio		*								*		*			
Lindley	5-6	ro	r	5-6	m	dm	Mass		*	*												
Martha	7-8	r	gy	5-6	m	m	Mo		*	*				†	*				†			
Massasoit	7-8	r	r	5-6	m	dm	Mass		*	*					*							
Merrimac	8-9	r	b	7	m	dm	Mass		*													
Mills	5-6	r	b	10	em	d	Ont		**													
Moore *Early*	9-10	r	b	5-6	e	m	Mass			**	**	**	**	**		**	**					
Niagara	8-9	r	w	5-6	ml	m	N. Y		*	*	*	*	**	**								
Olita	5-6	r	w	3-4	m	d	Tex		*		*											
Perkins	7-8	r	r	2-3	ve	m	Mass		—		*	*	*	*								
Pocklington	8-9	r	wy	5-6	em	m	N. Y		*		*		†			*			†			
Prentiss	7-8	r	w	7-8	m	d	N. Y		*			*			*	†						
Salem	10	r	b	5-6	m	dm	Mass		**			*			*			*				
Telegraph	7-8	ro	b	5-6	m	m	Pa		*	*				*	*			†				
Triumph	10	r	y	7-8	vl	d	Ohio		*			*		*								
Ulster	5-6	r	a	9-10	m	d	N. Y		*		*											
Vergennes	7-8	o	r	8-9	m	dm	Vt		**							*						
Victor, *Early*	5-6	r	b	7-8	ve	dm	Kans		*		*				**							
Washington, *Lady*	5-6	r	yw	6-7	l	d	N. Y					*										
Wilder	9-10	r	b	7-8	m	m	Mass		**	**	**		**									
Winchell (*Green Mountain*)	4-5	r	w	7-8	e	d	Vt		**		*						*					*
Woodruff	8-9	r	r	4-5	em	m	Mich		*		**											
Worden	7-8	r	b	7-8	em	dm	N. Y		**	**	**	**	*	**		**	**	**	**			
Wyoming	7-8	r	r	4	m	m	N. Y		*	*	*	*		**		†						

[1] Includes apparent hybrids.

Section 7.—GRAPES. (Vitis.)—Continued.

Subsection 4.—*V. LINCECUMII.*

Name.	Description.							Districts and starring.													
	Size.	Form.	Color.	Flavor.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Carman	8–9	r	b	7–8	vl	dm	Tex	..	*	..	*	..	..	*	..	..	..	..	..	..	..	..
Jaeger, *Hermann*	5–6	r	b	7–8	m	dw	Tex	..	*	..	..	..	..	*	..	..	..	..	..	..	..	..

Subsection 5.—*V. ROTUNDIFOLIA.*

Flowers	8–9	r	b	4–5	l	dw	South	..	..	..	..	..	..	*	*	..	..	..	..	..	..	..	..
Scuppernong	8–9	r	y	5–6	m	w	N. C	..	..	..	..	..	..	**	**	*	..	..	..	..	..	..	..
Tenderpulp	8–9	r	b	4–5	m	w	S. C.	..	..	..	..	..	..	..	*	*	..	..	..	..	..	..	..
Thomas	6–7	r	b	5–6	m	w	S. C	..	..	..	..	..	..	*	*	*	..	..	..	..	..	..	..

Subsection 6.—*V. VINIFERA.*[1]

[Key.—Size, scale 1 to 10: 1, very small; 10, very large. Form: ov, oval; r, round. Color: a, amber; b, black; p, purple; r, red; w, white; y, yellow. Flavor: m, muscat; s, sweet. Season: e, early; l, late; m, medium; v, very. Use: t, table; w, wine; r, raisin. Abbreviations of names of places of origin: Eur., Europe.]

Alexandria, *Muscat of*	8–9	ov	w	m	l	r	Eur	..	..	..	..	..	..	*	..	..	..	..	..	*	**	..
Barbarossa	9–10	rov	b	s	vl	t	Eur	..	..	*	*	..	..	*	*	*	*	*	..	..	..	..	..
Black Hamburg	9–10	rov	.....	s	m	t	Eur	..	..	..	..	..	..	*	*	..	..	..	..	..	..	..	..
Calabrian	.....	.....	w	s	l	t	Eur	..	..	..	..	..	..	*	..	..	..	..	..	..	..	..	..
Carminet *Medoc*	.....	.....	.....	.....	.....	w	Eur	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Golden Champion	9–10	ov	a	s	m	t	Eur	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Colman, *Gros*	.....	.....	p	s	l	t	Eur	..	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Cornichon, *Red*	.....	.....	.....	.....	.....	t	Eur	..	..	..	..	..	..	..	..	..	..	..	..	..	*	..	..
Feher Szagos	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	*	*	..
Frontignan, *White*	6–7	r	w	m	m	t	Eur	..	..	..	..	..	..	*	..	..	..	..	..	..	..	..	..
Griesa, *Piedmont*	.....	.....	.....	.....	.....	t	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	*	..	..
Malaga	.....	.....	.....	.....	.....	t	Eur	..	..	..	..	..	..	..	..	..	..	..	..	..	*	..	..
Olivet *Cadinet*	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	..	..	..	..	..	..	..	*	..	..
Peru, *Rose of*	8–9	r	b	s	e	t	Eur	..	..	..	..	..	..	*	..	..	..	..	..	..	*	**	..
Prince, *Black*	8–9	ov	b	s	m	t	Eur	..	..	..	..	..	..	*	..	..	..	..	..	..	*	..	..
Quagliano	.....	.....	.....	.....	.....	.....	.....	..	..	..	..	..	..	*	..	..	..	..	..	..	*	..	..
Sweetwater (*Fontainbleu*)	6–7	r	w	s	e	t	Eur	..	..	..	..	..	..	..	..	..	..	..	..	..	*	**	..
Thompson *Seedless*	3–4	o	y	s	e	tr	?	..	..	..	..	..	..	..	..	..	..	..	..	..	*	**	..
Tokay, *Flame*	8–9	r	r	s	m	t	Eur	..	..	..	..	..	..	..	..	..	..	..	..	..	*	**	..
West St. Peter	.....	.....	b	s	ve	t	Eur	..	..	..	..	..	..	*	..	..	..	..	..	..	..	..	..
Zinfindel	.....	.....	b	s	m	w	Eur	..	..	..	..	..	..	..	..	..	..	..	..	..	*	..	..

Subsection 7.—*V. VULPINA; syn. RIPARIA.*[2]

Berckmans	5–6	r	r	10	m	d	S. C	..	*	..	..	..	**	..	..	..	..	..	..	..	..	..	..
Clinton	2–3	r	b	5–6	vl	w	N. Y	..	..	*	*	*	..	..	*	..	..	..	..	..	..	..	..
Missouri Reisling	5–6	r	gw	7–8	m	w	Mo	..	..	*	*	..	**	*	*	..	*	..	..	..	..	..	..
Noah	2–3	r	w	5–6	ml	w	Ill	..	*	..	..	*	..	*	..	*	..	..	..	..	..	..	..

[1] Includes those heretofore recommended for general cultivation under glass, together with others recommended as adapted to at least portions of Districts 13 and 14 for open-air cultivation, with irrigation.

[2] Includes apparent hybrids.

Section 8.—MULBERRIES. (Morus.)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: c, cylindrical; l, long; s, short. Color: b, black. Quality, scale 1 to 10: 1, very poor; 10, best. Season (June): b, beginning. Use: d, dessert; k, kitchen.]

Name.	Description.							Districts and starring.														
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Downing	5-6	lc	b	8-9	b	dk	N. Y.	*	*				*	*	*				†			†
Hicks	4-5	sc	b	7-8	b	dk	Ky.	*				*	*	*								
New American	5-6	lc	b	8-9	b	dk	N. Y.?	*	*													
Stubbs	10	lc	b	10	....	d	South.				**	**	**									

Section 9.—NECTARINES AND PEACHES. (Persica.)

SUBSECTION 1.—NECTARINES. (*P. VULGARIS VAR. LÆVIS.*)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: c, compressed; o, oblate; ov, oval, r, round. Color: c, creamy; g, green; r, red; w, white; y, yellow. Adhesion: c, cling; f, free; s, semicling. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Belg., Belgium; Eng., England; Eur., Europe; Fr. France.]

Name.	Description.									Districts and starring.												
	Size.	Form.	Color. Skin.	Color. Flesh.	Adhesion.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Boston	7-8	rov	yr	y	f	5-6	m	d	Mass.	*	*							*	*				**	
Downton	7-8	rov	gr	gr	f	5-6	ve	d	Eng.	*	*												*	
Early Newington	7-8	rov	gr	gwr	c	9-10	e	d	Eng.?	*		*						*					*	
Early Violet	7-8	r	yr	wr	f	7-8	ve	d	Fr.	*		*											*	
Elruge	5-6	rov	gr	g	f	7-8	l	d	Eng.	*							*	*					*	
Stanwick	6-7	rov	gr	w	f	4-5	l	d	Eng.	*	*		*				*							

SUBSECTION 2.—PEACHES. (*P. VULGARIS.*)[1]

Name.	Size.	Form.	Color. Skin.	Color. Flesh.	Adhesion.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Alexander	5-6	r	wr	cw	s	5-6	ve	dm	Ill.		*		*			**	**		**					**
Allen *October*	7-8	r	yr	yr	f	5	l	dm	Mo.								*							
Amelia	7-8	r	wr	w	f	7-8	e	dm	N. C.		*		*	*		*								
Angel	7-8	r	wr	gw	f	10	e	dm	Fla.							*								
Austin	7-8	ov	wr	f	c	5-6	l	km	Am.								*							
Beers *Smock*	7-8	ov	yr	yr	f	5-6	l	km	N. J.		*													
Bellegarde	8-9	r	ygr	gy	f	8-9	m	d	Fr.		*							*						
Bergen *Yellow*	8-9	r	yr	y	f	8-9	m	d	Am.		*													
Bidwell Early	5-6	ov	wr	gw	c	5-6	ve	dk	Fla.							*								
Bidwell Late	8-9	ov	wr	gw	c	7-8	e	dk	Fla.							**								
Bilyeu	8-9	r	gw	w	f	7-8	vl	dkm	Md.		*		*											
Blood Cling	8-9	rov	y	yr	c	5-6	vl	k	Am.								*	*						
Blood Free	8-9	rov	y	yr	f	5-6	vl	k	Am.								**		*					
Cabler *Indian*	8-9	r	r	r	c	4-5	m	k	Tex.							**	*							
Chair *Choice*	7-8	r	yr	yr	f	4-5	m	km	Md.		**													
Champion	7-8	r	cr	w	f	10	em	dm	Ill.		*													
Chili *Hill's*	5-6	ovc	yr	yr	f	5-6	me	m	N. Y.		**													
Chinese *Cling*	9-10	rc	cwr	wr	c	7-8	m	km	Am.			*	*	*		*	*							
Climax	5-6	rov	yw	yw	f	5-6	e	dm	Fla.							*	*							
Columbia	7-8	r	w	y	f	2-3	ml	m	Ga.								*		*					
Coolidge	7-8	r	wr	w	f	7-8	m	dm	Mass.		*							*						
Countess	8-9	r	wr	w	f	6-7	m	dm	Fla.							**	*							
Crosby	5-6	r	yr	y	f	5-6	m	m	Mass.		**													
Druid Hill	7-8	r	cr	w	f	8-9	l	dm	Md.		*	*				**								
Early Barnard	5-6	r	yr	y	f	6-7	m	m	Ill.		*							*						
Early Chin	5-6	ov	w	w	f	10	ve	dm	Tex.							*	*							
Early Crawford	9-10	rov	yr	y	f	9-10	m	dm	N. J.		**	**	**	**		*	*							**
Early York	5-6	rov	wr	w	f	8-9	e	dm	Eng.?		*	*	*	*		**								*/

[1]The distinctive peculiarities of the so-called families or strains of peaches known as Chinese, Persian, and Spanish being more or less ill defined, and mixed by crossing or hybridization, a correct classification of varieties under these heads is not deemed either necessary or practicable.

Section 9.—NECTARINES AND PEACHES. (Persica.)—Continued.

SUBSECTION 2.—PEACHES. (*P. VULGARIS.*)—Continued.

Name.	Description.									Districts and starring.													
	Size.	Form.	Color. Skin.	Color. Flesh.	Adhesion.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Eaton	6–7	r	yr	y	c	5–6	m	dm	N. C	..	*	..	..	..	..	**	..	..	..	..	..	..	..	..
Elberta	8–9	rc	yr	y	f	7–8	ml	m	Ga	..	*	..	**	**	**	**	..	†	..	..	..	..	*	*
Ferdinand	7–8	rov	wr	w	c	8–9	e	dm	Fla	..	..	..	..	..	**	..	..	..	..	..	..	..	..	..
Florida *Crawford*	7–8	ovc	y	y	f	6–7	m	dm	Fla	..	..	..	..	..	*	*	..	..	..	..	..	..	..	..
Foster	9–10	r	yr	y	f	9–10	m	dm	Mass	..	**	..	*	..	†	**	..	..	..	..	..	..	*	*
George IV	7–8	r	wr	wr	f	10	m	d	N. Y.	..	*	..	*	..	..	**	..	..	..	..	..	..	**	..
Gibbon	8–9	....	w	w	f	6–7	vl	dk	Fla	..	..	..	..	..	**	..	..	..	..	..	..	..	..	..
Globe	8–9	rov	yr	y	f	6	m	m	Pa	..	*	..	..	**	..	..	..	..	..	..	..	..	..	..
Grosse Mignonne	8–9	r	cr	w	f	10	cm	d	Fr. ?	..	*	**	..	*	..	*	..	..	..	..	..	..	..	..
Hale	4–5	r	gwr	gw	s	5–6	e	m	Ohio	..	**	..	..	*	..	**	..	..	..	..	..	..	*	*
Heath *Cling*	10	rov	wr	w	c	10	vl	km	Md	..	*	*	..	..	..	**	..	*	..	..	..	..	..	*
Honey	4–5	ov	cr	wr	f	8–9	.....	dk	N. Y.	..	..	..	..	*	**	..	..	..	..	..	..	..	..	..
Hoover	.....	.....	.....	.....	.....	.....	vl	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Imperial	9–10	r	yr	w	f	8–9	.....	dk	Fla	..	..	..	..	..	*	*	..	..	..	..	..	..	..	*
Kenrick *Heath*	9–10	ov	wr	gw	f	4–5	l	m	Mass	..	..	*	..	**	..	..	..	..	..	..	..	..	..	..
Kerr, *Jessie*	7–8	ov	wr	w	f	5–6	ve	m	Md	..	..	..	..	..	..	*	..	..	..	..	..	..	..	..
Keyport	7–8	rov	wr	w	f	4–5	l	m	Am	..	*	*	..	..	..	..	..	..	..	..	..	..	..	..
Large York	6–7	r	wr	w	f	7–8	e	dm	N. Y. ?	..	**	**	..	..	..	**	..	*	..	..	..	..	*	..
Late Admirable	10	rov	gr	w	f	10	m	d	Fr	..	*	..	..	..	..	**	..	..	..	..	..	..	..	..
Late Crawford	10	r	yr	y	f	10	l	dm	N. J	..	**	**	**	**	..	**	..	**	..	..	..	..	*	**
Late Rareripe	8–9	rov	yr	w	f	10	m	dm	Am	..	*	..	..	..	**	*	..	..	..	..	..	..	..	..
Lee, *General*	9–10	ro	g	g	c	8	e	m	Am	..	..	*	..	*	..	**	..	..	..	..	..	..	..	..
Lemon *Cling*	9–10	rov	yr	y	c	10	m	dm	S. C	..	..	..	*	**	..	*	..	..	..	..	..	..	**	..
Leopold	8–9	r	yr	y	f	7–8	m	dm	Belg	..	..	..	..	..	..	**	..	..	..	..	..	..	..	..
Louise	5–6	r	r	w	f	7–8	e	dm	Eng	..	*	*	*	..	..	*	..	..	..	..	..	..	*	..
Maggie *Burt*	7–8	ov	w	w	c	9	ve	dm	Tex	..	..	..	..	..	**	*	..	..	..	..	..	..	..	..
Morris White	7–8	ov	cw	w	f	5–6	m	km	Am	..	*	..	..	..	..	*	..	..	..	..	..	..	..	..
Mountain Rose	7–8	r	wr	w	f	7–8	cm	dm	N. J	..	..	*	*	..	*	**	..	..	..	..	..	..	..	..
Oldmixon Cling	7–8	rov	c	w	c	10	m	km	Am	..	*	..	**	..	..	**	..	*	..	..	..	..	**	..
Oldmixon Free	7–8	rov	c	w	f	8–9	m	dm	Am	..	..	*	*	..	..	**	..	*	..	..	..	..	*	..
Onderdonk	7–8	ov	w	w	f	10	m	dm	Tex	..	..	..	..	..	*	**	..	..	..	..	..	..	..	..
Pallas	7–8	ov	w	w	f	6–7	e	dm	Ga	..	..	..	..	*	*	*	..	..	..	..	..	..	..	..
Parham	5–6	r	yw	wr	f	5–6	l	mk	Am	..	..	..	..	..	..	**	..	..	..	..	..	..	..	..
Peen to	5–6	f	w	w	c	7–8	e	d	China	..	..	..	..	..	**	*	..	..	..	..	..	..	..	..
Picquet	7–8	r	yr	y	f	5–6	l	d	Ga	..	..	*	*	..	..	**	..	..	..	..	..	..	..	..
President	7–8	rov	yr	w	f	5–6	m	dm	N. Y.	..	*	*	*	..	..	..	..	*	..	..	..	..	..	..
Red Cheek *Melocoton*	7–8	rov	yr	y	f	5–6	m	dm	Am	..	*	..	..	..	..	*	..	..	..	..	..	*	..	..
Reeves *Favorite*	7–8	rov	yr	y	f	5–6	m	m	N. J	..	*	*	*	..	*	**	..	..	..	..	..	..	..	..
Richmond	8–9	r	yr	y	f	6–7	m	m	N. Y	..	..	..	..	..	*	..	..	..	..	..	..	..	..	..
Rivers	7–8	rc	cw	w	f	7–8	e	dm	Eng	..	*	..	..	..	..	**	..	..	..	..	..	..	..	..
Royal George	5–6	r	wr	w	f	10	m	d	Eur	..	*	..	..	..	..	**	..	..	..	..	..	..	..	..
Salway	7–8	rov	yr	y	f	5–6	l	m	Eng	..	*	..	*	..	**	..	..	*	..	..	..	..	..	**
Smock	7–8	ov	yr	y	f	5–6	l	m	N. J	..	*	..	*	..	..	..	..	**	..	..	..	..	*	..
Sneed	6–7	ov	gw	w	c	6–7	ve	m	Tenn	..	..	..	*	..	**	*	..	..	..	..	..	..	..	..
Snow	7–8	r	w	w	f	6–7	m	dm	Am	..	..	..	..	..	..	*	..	..	..	..	..	..	..	..
Snow Orange	5–6	r	yr	y	f	5–6	m	m	Mich	..	**	..	..	..	..	..	..	..	..	..	..	..	..	..
Stevens *Rareripe*	5–6	rov	cw	w	f	6–7	ml	m	N. J	..	**	..	..	..	..	*	..	..	..	..	..	..	..	..
St. John	7–8	r	yr	y	f	5–6	e	m	Am	..	*	..	..	..	†	**	..	..	..	..	..	..	..	..
Strawberry	5–6	ov	r	w	f	7–8	cm	dm	N. J	..	..	..	..	..	..	*	..	..	..	..	..	..	*	..
Stump	10	rov	wr	w	f	5–6	ml	m	N. Y.	..	**	**	*	..	..	*	..	*	..	..	..	..	*	..
Susquehanna	7–8	r	yr	y	f	9–10	m	dk	Pa	..	*	**	**	..	..	*	..	..	..	..	..	..	*	..
Thurber	7–8	rov	wr	w	f	7–8	e	d	Ga	..	*	*	..	..	..	*	..	..	..	..	..	..	..	..
Tillotson	5–6	r	wr	w	f	7–8	e	d	N. Y.	..	*	*	..	..	..	*	..	..	..	..	..	..	*	..
Tippecanoe	10	r	yr	y	c	6–7	l	dm	Pa	..	*	..	..	..	..	*	..	..	..	..	..	..	..	..
Wager	5–6	ov	y	y	f	4–5	m	m	N. Y.	..	*	..	*	..	..	..	..	..	..	..	..	..	..	..
Waldo	4–5	ov	w	w	f	6–7	e	dm	Fla	..	..	..	..	..	*	*	..	..	..	..	..	..	..	..
Ward *Late*	7–8	rov	wr	w	f	7–8	vl	dk	Am	..	..	*	*	..	..	..	..	..	..	..	..	..	*	..
Waterloo	5–6	r	wr	gw	s	5–6	ve	dm	N. Y.	..	*	*	..	..	..	..	..	..	..	..	..	..	..	..
Wheatland	9–10	r	yr	y	f	6–7	m	dm	N. Y.	..	**	..	..	..	..	..	..	..	..	..	..	..	..	..
Yellow Rareripe	7–8	r	yr	y	f	7–8	m	dm	Am	..	..	*	..	..	..	..	..	..	..	..	..	..	*	..

Section 10.—PEARS. (Pyrus communis and sinensis.)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: i, irregular; o, oblate; ob, oblong; obo, obovate; obt, obtuse; ov, ovate; p, pyriform; r, round; t, turbinate. Color: b, brown; c, crimson; g, green; r, red; ru, russet; y, yellow. Texture: b, buttery; f, firm; g, granular; m, melting; t, tender. Flavor: a, acid; as, astringent; j, juicy; s, sweet; v, vinous; p, perfumed. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Belg., Belgium; Eng., England; Eur., Europe; Flem., Flemish Provinces; Fr., France; Hol., Holland.]

Name.	Description.									Districts and starring.														
	Size.	Form.	Color.	Texture.	Flavor.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Abbot	5–6	obobop	yeru	bm	sp	6–7	e	d	R. I.		*	*												
Amanlis, *Beurre*	7–8	oboi	yrbru	bm	jp	4–5	e	m	Belg.		*	*	*	*		*								*
Ananas *d'Ete*	6–7	p	ybru	bm	sp	5–6	em	d	Hol.		*			*										
Andrews	6–7	pi	ygr	m	v	4–5	e	d	Mass		*	*		*		*								
Angouleme, *Duchess de*	10	obobo	gyru	b	v	5–9	m	dm	Fr.		**	**	**	**		**	**	**			**		**	*
Anjou	7–8	obtp	gre	m	vp	8–9	m	dm	Fr.		**	**	**	*		**	**	**			**		*	**
Ansault	4–5	rob	gyru	m	sv	4–5	e	m	Fr.		*							†						
Archangel	8–9	obop	yru	bm	jp	4–5	m	m	Fr.		**	**		*		**								
Bartlett	8–9	obobtp	yrur	bt	jvp	6–7	em	m	Eng.		**	**	*	*	*	**	**	**			**		**	**
Bergen	8–9	obtp	yc	bm	jsp	4–5	m	m	N. Y.		**													
Bessemianka	5–6	oobo	y	g	js	4–5	e	d	Rus.										*					
Bilboa	5–6	obop	yru	bm	v	5–6	e	d	Spain		*	*		*		*		*						
Bloodgood	4–5	tobo	yru	bm	sp	5–6	e	d	N.Y.?		**	**	*	**		*	**	**			*		*	
Bordeaux, *Duchess de*	5–6	rop	yru	....	js	4–5	l	m	Fr.		*			*			†							
Bosc	8–9	p	yrur	mb	p	10	m	dm	Belg.		**	*	*	*		**		*						
Boussock	7–8	obop	yru	bm	jp	5–6	m	m	Belg.		*	**	*	*		*		**			*		*	
Brandywine	5–6	p	ygru	m	jvp	4–5	e	m	Pa.		**	**		*			*	*			*		*	*
Brignais (*Des Nonnes*)	5–6	ro	g	m	jp	5–6	e	dm	Eur.?		*			*		**								
British *Queen*	7–8	obop	ruc	bm	s	6–7	ml	d	Eng.		*													
Buffum	5–6	obobo	yr	b	sv	5–6	em	m	R. I.		*	*		**		*	*	**			*		*	
Catillac	10	t	ybr	f	as	2–3	vl	k	Fr.		*	*											*	
Chambers	4–5	robo	yr	gf	s	4–5	ve	d	Md.?				**			†								
Clairgeau	7–8	p	yc	bg	jsp	4–5	l	m	Fr.		*	**	*	*		*	*	**					**	**
Clapp *Favorite*	8–9	obop	yc	bm	jsv	6–7	e	dm	Mass		**	*	*	**		**	*	**					†	*
Columbia	8–9	obo	y	m	jsp	4–5	l	m	N. Y.		*					*					**			
Comice, *Doyenne du*	8–9	rp	yc	mb	jsp	8–9	ml	dm	Fr.		*	*						†					*	
Dana Hovey	3–4	obop	yru	m	jsp	10	l	d	Mass		*	*					†							
Diel	8–9	obop	yru	gb	sv	5–6	m	d	Belg.		**	*	*	*				*			*		*	*
Dix	7–8	obp	yru	m	jsp	8–9	m	d	Mass		*							*						
Dumas, *Belle Epine*	5–6	obop	gyru	bm	js	5–6	ml	d	Eur.		*	*					†	*						
Easter *Beurre*	7–8	robo	ygru	bm	js	5–6	vl	d	Eur.		*	**	*	*		*	*	*					*	*
Elizabeth, *Manning*	4–5	obop	yr	m	jsp	6–7	e	d	Belg.		*	**		*				†						
Flemish *Beauty*	8–9	obo, obtp	yrur	m	jsp	5–6	em	m	Belg.?		**	*	**	**		*	**	**			**		*	*
Fontenay, *Jalousie de*	5–6	obobop	ygrur	bm	rich	5–6	m	d	Fr.		*													
Foster *Seckel*	3–4	obp	yr	....	....	10	e	dm	Am.		*													
Fredk. Clapp	6–7	rp	y	m	jvp	5–6	m	dm	Mass		**													
Fulton	4–5	ro	ru	b	j	5–6	ml	dk	Me.		*	**												
Garber	7–8	robtp	yr	....	....	3–4	ml	km	Fr.		*	*			*	*								
Ghislain	5–6	p	y	b	jrich	4–5	m	d	Belg.		*	*		*		*	*	**			*		*	*
Giffard	5–6	p	gyr	m	jvp	6–7	e	dm	Fr.		**	**	**	*		*	*	**			*		*	*
Glout Morceau	6–7	obop	gyb	bm	srich	4–5	l	d	Flem.		*	*		*		*	*	**					*	
Goodale	7–8	obp	yeru	mg	svp	5–6	m	dm	Me.		*													
Goubalt	3–4	obo	gy	m	j	3–4	em	km	Fr.		*					**								
Gray Doyenne	3–4	ovobo	ru	bm	rich	10	m	d	Fr.		*	**		*		*	*							
Hardy, *Beurre*	7–8	obop	grur	bm	jv	....	m	m	Eur.?		**			*				*					**	
Henkel	7–8	obtp	gyru	m	v	8–9	e	dk	Belg.		*	**		*									*	
Heyst, *Emile d'*	8–9	obp	yru	m	svp	8–9	ml	d	Belg.		**			*			†	†						
Hosenschenk	5–6	ro	yg	gm	jv	4–5	e	dm	Pa.		**	*					*	*					*	
Howell	6–7	rp	yr	m	jv	5–6	m	dm	Conn.		**	**	**	**		*	*	**			*		*	*
Jaminette	7–8	obo	grub	gb	js	4–5	l	km	Fr.?		*													
Jodoigne, *Triomphe de*	8–9	obop	yeru	gm	js	4–5	m	mk	Belg.			*	**											
Julienne	3–4	obo	y	fb	sj	var	e	m	Am.?		*	*				**		*						
Kieffer	7–8	rov	yru	gm	js	3–4	ml	mk	Pa.		*	**	**	**	**	**	*							
Kingsessing	7–8	obp	gy	gb	jsp	4–5	e	km	Pa.		*	*	*	*		*	*	†						
Kirtland	4–5	obtobo	yrru	m	jsp	5–6	e	d	Ohio		*	*		**		*	*	*			*			
Knight	5–6	op	yg	m	js	3–4	m	k	R. I.		*	*												
Langelier	5–6	obop	yeru	mg	v	5–6	l	d	Eng.		*	*		*			*							
Lawrence	5–6	obop	yru	m	sp	7–8	l	dm	N. Y.		**	**	**			**	**	**			**		*	*
Le Conte	7–8	robtp	yr	m	s	3–4	e	m	Am.		*		*	**	*	**		†						
Louise *Bonne de Jersey*	7–8	obp	gbr	m	j	4–5	m	m	Fr.		**	*	**	**		*	*	**			*		*	*

Section 10.—PEARS. (Pyrus communis and sinensis.)—Continued.

Name.	Description.									Districts and starring.															
	Size.	Form.	Color.	Texture.	Flavor.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lucrative	5-6	obop	ygru	m	s	8-9	e	dm	Flem	..	*	..	..	..	*	..	*	*	..	..	..	*	..	*	*
McLaughlin	7-8	obtp	gyru	m	jsp	4-5	l	dk	Me	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Madeleine	5-6	obop	ygb	m	sp	4-5	e	d	Fr	..	*	*	*	..	*	..	..	..	*	..	..	..	..	..	*
Malines, *Josephine de*	5-6	rop	gyru	m	jsp	5-6	l	dm	Belg	..	..	*	..	..	*	..	..	*	..	..	..	..	†	..	..
Marguerite, *Petite*	4-5	obtp	ybru	bm	jsh	5-6	e	d	Fr	..	..	..	..	*	..	..	..	*	..	..	..	..	..	..	..
Marie Louise	6-7	obp	gyru	bm	jvas	5-6	m	dk	Belg	..	..	*	..	..	..	..	*	..	..	..	..	..	..	..	..
Merriam	5-6	ro	yru	gm	jvp	4-5	m	dm	Mass	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mount Vernon	6-7	obtp	yrur	gm	jvp	5-6	ml	dm	Mass	..	*	†	..	*	..	..	..	*	..	..	..	..	..	..	..
Moyamensing	5-6	ro	yr	gm	js	3-4	e	dm	Pa	..	..	..	..	..	*	*	..	..	..	..	..	..	..	..	..
Napoleon	6-7	obtp	gy	m	js	3-4	e	km	Belg	..	*	..	..	..	..	..	..	*	*	..	..	..	..	..	..
Onondaga	7-8	obtp	yru	bmg	jv	4-5	ml	km	Conn	..	..	..	*	..	..	..	..	*	..	..	*	..	*	*	..
Osband *Summer*	3-4	obop	y	m	jsp	5-6	ve	dm	N. Y.	..	..	..	..	*	..	*	*	..	..	..	..	..	..	*	..
Ott	3-4	robo	gyrur	m	sp	4-5	e	dm	Pa	..	*	*	..	*	..	*	..	*	..	..	..	..	..	..	..
Paradise d'Automne	7-8	obp	yru	gm	jvp	5-6	m	dk	Belg	..	*	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Passe Colmar	6-7	obop	yru	b	jsp	4-5	l	km	Belg	..	..	..	..	..	..	..	..	..	..	..	*	..	..	..	..
Pound	8-9	p	ygb	fg	v	2-3	vl	k	Enr	..	*	..	..	..	..	..	..	*	..	..	..	..	*	*	..
Pratt	5-6	obtp	gyeru	m	jvs	4-5	e	mk	R. I	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Quimper, *Supreme de*	5-6	rp	grru	m	jsp	4-5	e	d	Belg	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Reeder	4-5	robtp	gru	mbg	svp	8-9	l	dm	N. Y	..	*	..	..	..	..	..	..	†	†	..	..	..	..	..	..
Rostiezer	3-4	obop	yrb	mb	svp	10	e	d	Enr	..	*	*	*	*	..	*	..	*	..	..	..	..	*	..	..
Rutter	6-7	rp	gyru	gm	sv	5-6	ml	dm	Pa	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Seckel	3-4	obo	bgrur	bm	jp	10	m	dm	Pa	..	*	*	*	*	..	*	*	*	..	..	..	*	..	*	*
Sheldon	5-6	robo	gyrub	m	jsvp	5-6	ml	dm	N. Y.	..	*	*	*	*	..	..	*	*	..	..	..	..	*	..	..
Souvenir du *Congress*	9-10	obobtp	yr	bt	jvp	5-6	e	m	Fr	..	*	..	..	..	*	..	..	..	*	..	..	..	..	..	*
Sterling	5-6	rop	yrne	m	js	4-5	e	dm	N. Y	..	*	..	..	..	..	..	..	..	*	..	..	..	..	..	..
Stevens	7-8	r	y	b	sp	4-5	e	d	N. Y	..	..	*	..	..	..	..	..	*	..	..	..	..	..	*	*
Summer Doyenne	2-3	robo	yr	m	js	4-5	ve	d	Belg	..	*	*	*	*	..	**	*	*	..	..	*	..	*	*	**
Superfin	5-6	rp	yrru	bm	v	7-8	m	dkm	Fr	..	*	..	..	**	..	**	..	*	..	..	*	..	*	..	..
Treyve	5-6	obop	yrru	m	jsp	5-6	em	d	Fr	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tyson	4-5	p	yrne	m	jsp	7-8	e	dm	Pa	..	*	..	..	..	..	..	..	..	..	..	..	..	*	†	..
Urbaniste	5-6	obop	yru	bm	jp	8-9	ml	d	Belg	..	..	*	..	..	..	..	..	*	..	..	..	..	*	..	..
Vicar	7-8	p	yb	b	jv	4-5	l	km	Fr	..	*	*	..	..	..	*	..	*	..	..	..	..	..	*	*
Washington	5-6	ovobo	yr	m	js	5-6	e	d	Del	..	*	*	..	..	..	†	..	..	..	..	..	..	..	..	..
White Doyenne	6-7	obo	yr	bm	jsv	10	m	dm	Fr	..	..	*	..	..	..	..	..	..	..	..	..	..	..	*	**
Winter Nelis	4-5	robo	ygru	bm	jsp	10	l	dm	Belg	..	**	..	..	..	..	..	*	**	..	..	*	..	**	**	

Section 11.—PLUMS. (Prunus.)

Subsection 1.—*P. AMERICANA.*

[Key.—Size, scale 1 to 10: 1, very small; 10, very large. Form: c, compressed; f, flattened; o, oval; ob, obovate; obl, oblong; r, round. Color: b, black; br, brown; g, green; p, purple; r, red; v, violet; w, white; y, yellow. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late; v, very. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Belg., Belgium; Eng., England; Eur., Europe; Fr., France; Ger., Germany; Jap., Japan; Ont., Ontario; Rus., Russia.]

Name.	Description.							Districts and starring.																	
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
Cheney	3-4	o	r	5	m	km	Wis	..	..	..	..	..	..	..	..	..	*	..	..	..	..	..			
De Soto	5-6	ro	yr	5-6	m	km	Wis	..	..	..	..	..	..	..	..	**	**	..	*	..	..	..			
Downing, *Charles*	6-7	ro	r	5-6	me	m	Ia	..	..	..	..	..	..	..	..	*	..	..	..	..	..	..			
Forest *Garden*	5-6	r	r	5	em	k	Ia	..	..	..	..	..	..	..	..	**	**	..	**	..	..	..			
Hawkeye	5-6	r	r	6-7	ml	km	Ia	..	..	..	..	..	..	..	..	*	*	..	..	..	..	..			
Rockford	5-6	ro	yr	8-9	m	d	Ia	..	..	..	..	..	..	..	..	**	*	..	..	..	..	..			
Rollingstone	6-7	ro	r	6-7	m	dk	Minn	..	..	..	..	..	..	..	..	*	**	..	..	..	..	..			
Weaver	5-6	oc	r	2-3	m	km	Ia	..	..	..	*	..	..	..	..	*	**	..	*	..	..	..			
Wolf	6-7	ro	r	2-3	m	km	Ia	..	..	..	..	..	..	..	..	*	*	..	..	..	..	..			
Wyant	4-5	ro	yr	2-3	m	k	Ia	..	..	..	..	..	..	..	..	*	..	..	..	..	..	..			

Section 11.—PLUMS. (Prunus.)—Continued.

Subsection 2.—*P. ANGUSTIFOLIA.*

Name.	Description.							Districts and starring.																			
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Caddo Chief	5–6	o	r	6	ve	dm	La															
El Paso					vl		Tex															
Lone Star	2–3	o	r	3	m	k	Tex															
Newman	5–6	o	r	3–4	m	km	Ky															
Paris Belle					m		Tex															
Pottawattamie	5–6	r	r	3–4	ml	km	Tenn															
Transparent, *Yellow*	7–8	o	y	5–6	e	km	Tex															

Subsection 3.—*P. CERASIFERA.*[1]

Caradeuc, *De*	5–6	r	dr	3–4	e	k	S. C																				
Marianna	4–5	r	r	2–4	l	k	Tex																				
Pissard	5–6	r	r	2–3	l	k	?																				

Subsection 4.—*P. DOMESTICA.*

Agen, *Prune d'*	5–6	o	vp	10	m	dm	Fr																			**	**
Archduke	7–8	ro	b	3–4	e	km	Eur																				
Arctic, *Moore*	4–5	ro	b	5	e	dk	Me.?																				
Aubert, *Yellow*	8–9	o	y	7	e	km	Eur																				
Bavay (*Bavay Green Gage*)	5–6	r	y	10	m	dm	Belg																				**
Bleecker *Gage*	5–6	ro	y	5–6	em	dm	N. Y																				
Bradshaw	7–8	oob	rp	4–6	e	dm	Am																				
Clyman	6–7	or	bv	7–8	ve	dm	Cal																				
Columbia	9–10	r	brp	8–9	e	dk	N. Y																				
Copper	4–5	o	yr	3–4	em	k	Eur																				
Damson	3–4	o	p	3–4	l	km	Eur																				
Denniston *Superb*	7–8	r	yg	10	em	dm	N. Y																				
Diamond, *Black*	7–8	o	b	4–5	m	km	Am																				
Domine Dull	5–6	o	p	3–4	m	km	N. Y.?																				
Drap d'Or	4–5	r	y	4–6	e	d	Eur.?																				
Duane *Purple*	10	o	rp	3–4	em	km	N. Y																				
Emigrant	8–9	o	p	3–4	m	km	Kans.?																				
Englebert	3–4	ro	b	3–4	em	km	Belg																				
German *Prune*	6–7	o	p	4–6*	m	km	Ger																				
Golden Drop, *Coe*	7–8	o	yr	5–6	m	km	Eng																				
Grand Duke	9–10	o	b	5–6	ml	km	Eur.?																				
Hand (*General Hand*)	10	ro	y	3–4	m	m	Pa.?																				
Hudson *River Purple Egg*	9–10	o	rp	7–8	m	dm	N. Y.?																				
Hulings *Superb*	10	ro	gy	3–4	em	k	Pa																				
Imperial *Gage*	6–7	o	gy	10	m	dm	N. Y																				
Italian (*Fellenburg*)	5–6	o	b	3–4	l	mk	Eur																				
Jefferson	8–9	o	yrp	10	e	dk	N. Y																				
Kingston	9–10	o	b	4	m	km	Am.?																				
Kirke	5–6	robl	p	4–6	m	m	Eng																				
Lawrence *Favorite*	8–9	r	yg	10	e	dm	N. Y																				
Lombard	5–6	ro	vr	3–4	e	m	N. Y																				
McLaughlin	8–9	r	yr	10	e	dm	Me																				
Moldavka	7–8	o	y	6–7	e	m	Rus																				
Monroe *Egg*	5–7	o	gy	3–4	m	m	N. Y																				
Orleans	5–6	r	rp	3–4	e	m	Eng																				
Ottoman	5–6	ro	rp	4–6	e	m	N. Y																				
Peach	10	rf	brr	3–4	ve	k	Am.?																				
Pond (*Fonthill, Hungarian Prune*)	10	o	yr	4–5	m	m	Eng																				
Prince *Yellow*	6–7	o	y	5–6	e	dm	N. Y																				
Purple Favorite	6–7	rob	brp	10	e	dm	Am.?																				
Purple Gage	5–6	rf	vy	5–6	m	dk	Eur																				
Quackenboss	8–9	oblr	p	3–4	m	m	N. Y																				
Richland	5–6	o	rp	5–6	e	km	Pa																				
Royale Hative	5–6	r	pbry	5–6	e	k	Fr																				
Saratoga	5–6	ro	rp	4	e	m	N. Y																				
Saunders	8–9	ro	gy	4–5	m	km	Ont																				
Shropshire	3–4	ob	pb	3–4	m	k	Eng																				
St. Catharine	5–6	ob	y	5–6	m	dk	Fr																				

[1] Includes supposed hybrids.

Section 11.—PLUMS. (Prunus.)—Continued.

Subsection 4.—*P. DOMESTICA*—Continued.

Name.	Description.							Districts and starring.													
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Sharp *Emperor*	8-9	ro	ylp	3-4	ml	km	Eng		*													
Smith Orleans	8-9	o	rp	4-6	e	m	N. Y.		*													
Tours, *Royale de*	8-9	r	vr	4-5	m	dk	Fr		*						*							
Transparent *Gage*	6-7	rf	gyr	8-9	m	dk	Fr		**													
Wales, *Prince of*	8-9	robl	rp	10	m	m	Eng		**													
Wangenheim	5-6	o	p	4-5	e	m	Ger		*						†							
Washington	10	ro	yge	4-5	em	dm	N. Y.		**	*	**			**	*	**		*				*
Yellow Egg	8-9	o	y	3-4	e	km	Eur		*		*				*		*					**

Subsection 5.—*P. HORTULANA.*

Name.	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Clinton	7-8	r	r	.....	m	k	?							**								
Cumberland	5-6	r	y	4-5	l	km	Ga				*	*										
Golden Beauty	4 5	ro	y	4-5	ml	km	Tex							**								
Indian Chief	6-7	r	r	8	l	km	Tex							**								
Kanawha (*Peach Leaved*)	6-7	r	r	.....	l	k	Ga. (?)															
Miner	5-6	r	r	5-6	ml	km	Tenn				*			**		**	*	**				
Wild Goose	3-4	r	p	4-5	l	km	Tenn				**	**	*	**		**						

Subsection 6.—*P. TRIFLORA.*

Name.	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Abundance (*Botan*)	6-7	ro	brr	4-5	em	m	Jap		**	*		**	*	**		*						
Babcock	7-8	r	r	5-6	m	dm	Jap						**									
Botan White	5-6	r	p	4-5	m	km	Jap					*		*								
Burbank	6-7	r	py	4-5	ml	km	Jap		*			**	*	**		*						*
Chabot	5-6	ro	rp	5	em	km	Jap		*			**	**	**								
Excelsior	5-6	r	rp	6-7	e	dm	Ga		*				*									
Georgeson (*Hattankio 1*)	7-8	o	y	5-6	e	km	Jap					*		*								
Kelsey	10	ro	yr	4-5	e	m	Jap					*		**		*						
Kerr (*Hattankio 2*)	5-6	o	y	4-5	m	km	Jap						*									
Long Fruit	7-8	r	r	7	e	dm	Jap							*								
Normand	.....	r	r	9	ve	.....	Jap						†	*								
Ogon	6-7	r	y	3-4	e	km	Jap		*			†	†	†								
Red June	5-6	ov	r	4-5	ve	.....	Jap		†									*				
Red Nagate	5-6	ro	r	5-6	m	km	Jap		*				†	*								
Satsuma	6-7	r	p	7-8	ml	km	Jap		*			**	**	**								
Willard	3-4	ro	r	2-3	m	m	Jap		*				†									
Yellow Japan	5-6	r	py	4-5	l	.....	?															

Section 12.—QUINCES. (Cydonia vulgaris.)

[Key.—Size, scale 1 to 10: 1, very small; 10, very large. Form: o, oblate; ob, obtuse; p, pyriform; r, roundish. Color: g, greenish; o, orange; y, yellow. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late. Use: k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Fr., France; Ont., Ontario; Port, Portugal.]

Name.	Description.							Districts and starring.													
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Angers	8-9	obp	y	8-9	m	km	Fr		**	*	*											**
Champion	6-7	obp	gy	9-10	m	km	Am		*		*		*			**						*
Meech	7-8	ro	oy	6-7	m	km	N. J		*	*												
Missouri *Mammoth*	10	ro	oy	10	e	km	Mass		*							*						
Orange (*Apple*)	8-9	ro	oy	10	e	km	Am		**													
Pear	8-9	p	oy	10	em	km	Am		*													
Portugal	10	obp	y	.....	e	km	Port		**			*									*	
Rea	8-9	rob	py	7-8	e	km	N. Y.		**	*	*	*	*	*	*	*						**

Section 13.—RASPBERRIES. (Rubus.)

Subsection 1.—*R. IDÆUS.*[1]

[Key.—Size, scale 1 to 10: 1, very small; 10, very large. Form: c, conical; o, obtuse; r, roundish. Color: b, black; c, crimson; p, purple; r, red; s, scarlet; y, yellow. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Eng., England; Eur., Europe; Fr., France; Ont., Ontario.]

Name.	Description.							Districts and starring.														
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Clarke	7–8	c	c	7–8	e	d	Conn	**	..	..	*	*	..	*	..	..	..	..	..	..	..	..
Cluster, *Early*	..	..	..	..	..	..	Oreg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	**
Fastolf	10	re	pr	7–8	e	d	Eng	**	*	..	..	..	..	*	..	..	..	..	..	*	..	..
Fontenoy, *Belle de*[2]	8–9	c	c	5–6	l	d	Fr	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Franconia	8–9	oc	pr	5–6	m	dm	Fr.(?)	**	*	..	..	..	..	*	*	..	..	..	..	..	..	..
French	7–8	oc	c	5–6	m	dm	Pa	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Herstine	7–8	re	s	7–8	m	d	Pa	**	*	..	..	..	..	*	..	*	..	..	..	..	..	*
Hornet	10	c	c	5–6	m	d	Fr	*	..	..	*	..	..	*	..	..	..	..	..	..	..	..
Hudson River *Antwerp*	8–9	c	r	4–5	m	m	Eur	*	*	..	**	..	..	..	..	..	..	..	..	*	..	**
Knevett *Giant*	10	oc	r	7–8	m	dm	Eng	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..
October *Red (Four Seasons)*	5–6	rob	c	5–6	l	d	Fr	*	*	..	..	..	..	..	..	*	..	..	..	..	..	..
Orange (*Brinckle's Orange*)	10	rc	y	10	m	d	Pa	*	..	*	..	..	..	*	..	..	..	..	..	..	..	..
Pallnau	10	oc	c	5–6	m	d	Fr	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Red Antwerp	7–8	roc	r	5–6	m	d	Eng	..	..	..	..	..	..	..	..	..	..	..	..	..	..	**
Sonchetti	6–7	c	y	4–5	.....	d	Fr	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Subsection 2.—*R. NEGLECTUS.*

Caroline	5–6	ro	y	3–4	e	km	N. Y	*	..	..	..	*	..	..	..	..	*	..	..	..	..	..	..	*
Columbian	9–10	r	p	6–7	e	km	N. Y	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Philadelphia	4–5	r	p	4–5	em	km	Pa	*	..	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Purple Cane	4–5	r	p	4–5	em	k	N. Y	*	*	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Reliance	5–6	ro	p	5–6	m	km	N. J	*	..	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Shaffer	8–9	r	p	6–7	m	km	N. Y	**	*	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Subsection 3.—*R. OCCIDENTALIS.*

Cromwell	5–6	r	b	5–6	e	km	Conn	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Doolittle	5–6	r	b	5–6	e	km	N. Y	*	..	**	**	..	..	**	**	**	*	..	..	..	..	..	..	*
Earhart	4–5	r	b	5–6	el	k	Conn	..	*	..	..	..	..	..	..	..	..	*	..	..	..	..	..	*
Eureka (*Mohler*)	6–7	r	b	5–6	em	km	Ohio	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Gregg	7–8	ro	b	4–5	m	m	Ind	*	..	..	*	..	..	*	..	*	..	..	..	..	..	..	..	*
Hilborn	7–8	ro	b	6–7	e	dm	Ont	**	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Johnston	4–5	r	b	5–6	m	km	Ark	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	*
Kansas	6–7	r	b	5–6	m	km	Kans	*	..	..	..	..	..	..	..	*	*	..	..	..	..	..	..	..
Lotta	6–7	r	b	5–6	m	km	Kans	*	..	*	..	..	..	..	..	*	..	..	..	..	..	..	..	..
McCormick (*Mammoth Cluster*)	5–6	r	b	5–6	m	km	Ind	*	*	**	..	..	**	*	..	*	..	..	**	..	..	..	..	..
Miami	5–6	r	b	6–7	.....	km	Ohio	*	..	..	..	..	..	..	..	**	..	..	..	..	..	..	..	..
Nemaha	7–8	ro	b	5–6	e	m	Nebr	..	*	..	..	..	..	..	..	..	*	..	..	..	..	..	..	..
Ohio	5–6	r	b	4–5	e	km	Am	**	..	*	..	..	..	*	..	..	..	..	..	..	..	..	..	*
Older	5–6	r	b	5–6	em	km	Ohio	..	*	..	..	..	..	..	..	..	*	..	..	..	..	..	..	..
Palmer	4–5	r	b	5–6	e	km	Ohio	*	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..	*
Smith *Prolific*	5–6	r	b	5–6	e	km	N. Y	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sonhegan	4–5	r	b	5–6	m	km	N. H	**	**	..	*	..	*	*	*	*	..	*	..	..	..	..	..	*
Tyler	4–5	r	b	5–6	em	km	N. Y	*	..	..	**	..	**	..	..	..	*	..	..	..	..	..	..	..

Subsection 4.—*R. STRIGOSUS.*

Brandywine	5–6	rc	r	5–6	e	km	Del	*	**	..	**	..	..	..	..	..	..	..	..	..	..	..	..	..
Cuthbert	7–8	re	r	4–5	m	m	N. Y	**	*	*	..	..	..	*	..	..	..	..	..	*	..	..	..	*
Golden *Queen*	7–8	re	y	6–7	m	dk	N. J	**	*	*	..	..	..	*	..	..	..	..	..	..	..	..	..	*
Hansell	5–6	r	r	5–6	e	dm	N. J	*	**	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Loudon	6–7	re	r	5–6	m	dm	Wis	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Marlboro	7–8	r	r	4–5	m	m	N. Y	**	†	..	..	..	..	..	..	..	*	..	..	..	..	..	..	*
Superb	8–9	r	p	5–6	m	o	N. J	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Thwack	7–8	r	pr	4–5	m	m	N. Y	*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Turner	4–5	re	r	7–8	m	dm	Ill	**	**	**	..	..	..	*	..	..	..	*	..	..	..	..	..	..

[1] Includes possible hybrids.

[2] Named for Fontenoy, a village of Belgium.

Section 14.—STRAWBERRIES. (Fragaria.)

[KEY.—Sex: b, bisexual; p, pistillate. Size, scale 1 to 10: 1, very small; 10, very large. Form: c, conical; co, compressed; l, long; o, oblate, ob, oblong; ov, ovate; r, roundish. Color: c, crimson; d, dark; l, light; r, red; s, scarlet. Quality, scale 1 to 10: 1, very poor; 10, best. Season: e, early; m, medium; l, late. Use: d, dessert; m, market. Abbreviations of names of places of origin: Am., America; Can., Canada; Ont., Ontario.]

Names.	Description.							Districts and starring.														
	Sex.	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Bidwell	b	10	lc	dc	8–9	m	dm	Mich	..	*	*	..	*	..	..	..	*	..	..	*	..	..	..
Bubach *No. 5*	p	10	rob	s	5–6	e	m	Ill	..	*	*	*	*	..	**	*	**	*	..	..	..	..	†
Champion	p	6–7	rc	s	5–6	e	m	Pa	..	*	..	..	..	..	*	..	..	**	..	..	..	..	..
Crawford	b	7–8	rc	lc	9	m	dm	Ohio	..	*	..	..	..	..	*	..	..	..	..	..	..	..	..
Crescent	p	5–6	rc	bs	4–5	e	m	Conn	..	*	*	*	*	..	**	..	*	**	..	**	..	..	*
Cumberland	b	10	ro	bs	5–6	m	m	Pa	..	*	*	..	..	..	..	**	**	**	..	**	..	..	..
Downing, *Charles*	b	6–7	c	ds	6–7	m	dm	Ky	..	*	*	*	*	..	**	*	**	*	..	*	..	..	*
Enhance	b	7–8	c	bc	7–8	m	dm	Ohio	..	*	..	..	..	..	..	..	..	**	..	..	..	..	..
Eureka	p	6–7	r	br	5–6	m	dm	Ohio	..	*	*	..	..	..	..	..	..	..	..	..	..	..	..
Gandy	b	7–8	c	lc	7–8	m	dm	N. J	..	*	..	*	*	..	*	..	..	*	..	..	..	..	..
Greenville	p	7–8	roc	bc	7–8	e	dm	Ohio	..	*	..	..	..	..	..	..	..	*	..	..	..	..	..
Haverland	p	6–7	cco	s	7–8	m	dm	N. J	..	*	*	*	*	..	**	..	*	*	..	..	..	..	..
Hoffman	b	5–6	c	dc	7–8	m	dm	S. C	..	..	*	*	*	*	..	..	..	..	..	..	..	..	..
Jersey *Queen*	p	8–9	rc	bs	6–7	m	d	N. J	..	*	..	..	..	..	..	*	*	..	..	..	..	..	..
Jessie	b	9–10	rc	bs	5–6	m	dm	Wis	..	*	*	**	..	..	*	..	..	**	*	**	..	..	*
Manchester	p	7–8	oc	s	7–8	ml	dm	N. J	..	*	*	..	..	..	**	..	*	**	..	**	..	..	..
Michel *Early*	b	5–6	oc	r	7–8	e	m	Ark	..	..	..	..	*	..	..	..	..	..	..	..	..	..	..
Miner	b	10	c	c	5–6	m	dm	N. J	..	..	**	..	*	..	*	*	*	**	..	..	..	..	..
Monarch *of West*	b	10	roc	br	5–6	m	dm	Ill	..	*	..	**	**	..	*	..	*	..	..	..	..	..	*
Mount Vernon	b	8–9	roc	ls	5–6	m	dm	Am	..	*	*	..	**	..	..	..	*	*	..	..	..	..	..
Neuman	p	7–8	c	ls	4–5	m	m	S. C	..	..	..	..	*	*	**	..	..	..	..	..	..	..	..
Parker Earle	b	6–7	lc	br	6–7	m	dm	Tex	..	**	..	**	..	..	**	..	*	**	..	..	..	..	*
Pearl	b	5–6	oc	dr	5–6	m	m	South	..	*	†	..	..	..	..	..	..	..	..	..	..	..	..
Piper	b	7–8	c	c	5–6	e	m	Ill	..	*	..	..	..	..	..	..	*	*	..	..	..	..	..
Sandoval	b	7–8	roc	dc	8–9	e	m	Ill	..	*	..	..	..	..	..	*	..	*	..	..	..	..	..
Saunders	b	6–7	c	c	7–8	e	dm	Ont	..	*	..	..	..	..	..	..	..	*	..	..	..	..	..
Sharpless	b	8–9	cco	br	8–9	m	dm	Pa	..	..	**	..	..	..	**	**	*	*	..	*	..	..	**
Thompson, *Lady*	b	7–8	ov	c	5–6	e	dm	N. C	..	..	*	..	..	*	..	..	..	..	..	..	..	..	..
Van Deman	b	5–6	oc	s	7–8	m	d	Ark	..	*	..	..	..	..	..	..	..	*	..	..	..	..	..
Vick	b	4–5	r	bs	6–7	m	dm	Mo	..	*	..	..	..	..	*	..	*	..	..	†	..	..	*
Warfield	p	5–6	c	dr	7–8	e	m	Ill	..	*	*	..	*	..	..	**	**	**	..	..	..	..	..
Williams	b	6–7	rc	dc	9	e	dm	Can	..	*	..	..	..	..	..	..	..	..	..	..	..	..	..
Wilson	b	5–6	c	dc	7–8	em	m	N. Y	..	*	*	*	*	*	**	**	**	**	..	*	..	**	**
Wood, *Beder*	b	4–5	rc	ls	5–6	m	dm	Ill	..	*	..	..	..	..	..	..	..	**	..	..	..	..	..
Woolverton	b	5–6	c	dc	7–8	m	dm	Ont	..	**	..	..	..	..	..	..	..	**	..	..	..	..	..

Section 15.—NUTS.

SUBSECTION 1.—ALMONDS. (*AMYGDALUS COMMUNIS.*)

[KEY.—Size: l, large; m, medium; s, small. Form: b, broad; l, long; v, very. Flavor: s, sweet. Shell: s, soft; t, thin; v, very. Abbreviation of name of place of origin: Eur., Europe.]

Name.	Description.				Districts and starring.																	
	Size.	Form.	Flavor.	Shell.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Blowers					Cal														*	..
Brier	m		s	s	Cal														*	..
Drake	l		s	t	Cal														*	..
Golden State	lm	l	s	s	Cal														*	..
Harriott	lm	l	s	s	Cal														*	..
IXL	l	lb	s	s	Cal														*	..
King *Soft Shell*				vst	Cal														*	..
Languedoc	l		s	t	Eur														*	..
Lewelling	l		s	s	Cal		†												*	..
McCoy	ms				Cal														*	..
Ne Plus Ultra	l	vl	s	s	Cal														*	..
Nonpareil (*Extra*)	l	b	s	vt	Cal														*	..
Paper Shell	m		s	s	Cal														*	..
Routier *New*	l		s	s	Cal														*	..
Soft Shell, *Routier*	l		s	s	Cal		†												*	..
Supremo	l		s	vt	Cal														*	..
Tarragona	l	b	s	s	Eur														*	..
Twin, *Routier*	l			s	Cal														*	..

Section 15.—NUTS—Continued.

Subsection 2.—CHESTNUTS. (*CASTANEA.*)

[Key.—Size: l, large; m, medium; v, very. Quality: b, best; g, good; v, very. Abbreviation of name of place of origin: Eur., Europe.]

Name.	Description.				Districts and starring.														
	Size.	Quality.	Species.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Advance	vl	g	*japonica*	N. J			*												
Alpha	vl	g	*japonica*	N. J			*												
Beta	l	.....	*japonica*	N. J			*												
Combale, *Marron*	l	g	*sativa*	Eur														*	
Comfort	l	g	*sativa*	Pa			*	*											
Cooper	vl	vg	*sativa*	N. J			*												
Corson	vl	g	*sativa*	Pa			*	*											
Dager	l	vg	*sativa*	Del			*												
De Lyon	vl	g	*sativa*	Eur														*	
Felton	m	vg	*japonica*	Del		*	*												
Giant, *Japan*	vl	g?	*japonica*	N. J			*												
Hannum (*Styer*)	ml	g	*sativa*	Pa		*													
Hathaway	m	b	*dentata*	Mich		*													
Killen	vl	g	*japonica*	Del		*													
Moncur	m	vg	*sativa*	Del		*													
Murrell	m	vg	*dentata*	Va															
Numbo	l	g	*sativa*	Pa		*	*												
Paragon	l	g	*sativa*	Pa		*	*	*											
Parsons	l	g	*japonica*	N. Y		*	*												
Phillips	l	vg	*dentata*	N. J		*	*												
Reliance	l	g	*japonica*	N. J		*	*												
Ridgely	l	g	*sativa*	Del		†	*	*											
Scott	m	g	*sativa*	N. J			*												
Success	vl	vg	*japonica*	N. J		*													
Superb	l	.....	*japonica*	N. J		*	*												

Subsection 3.—FILBERTS AND HAZELNUTS. (*CORYLUS AVELLANA.*)

[Key.—Size: l, large; m, medium. Form: ob, oblong; ov, oval; r, round. Quality: g, good. Abbreviation of name of place of origin: Eur., Europe.]

Name.	Description.				Districts and starring.														
	Size.	Form.	Quality.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Du Chilly	l	.....	.....	Eur															
Jones	.....	ov	g	Del		*													
Lambert	l	ob	.....	Eur														*	
Piedmont	m	r	.....	Eur														*	
Purple Leaf	l	.....	.....	Eur		*												*	

Subsection 4.—PECANS. (*HICORIA PECAN.*)

[Key.—Size: l, large; m, medium; s, small. Form: c, cylindrical; l, long; ob, oblong; ov, oval; r, round. Quality: g, good; v, very.]

Name.	Description.				Districts and starring.														
	Size.	Form.	Quality.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Columbian	l	c	.....	La							*								
Jewett	l	l	vg	Miss							*								
San Saba	sm	cov	vg	Tex													*		
Stuart	l	rob	.....	Miss						*									
Van Deman	l	ob	.....	Miss						*									

Section 15.—NUTS—Continued.

SUBSECTION 5.—PERSIAN, ENGLISH, OR EUROPEAN WALNUT. (*JUGLANS REGIA.*)

[KEY.—Size: l, large; m, medium; v, very. Form: l, long; ob, oblong; ov, ovate; r, round. Quality: g, good; v, very. Abbreviation of name of place of origin: Fr., France.]

Name.	Description.				Districts and starring.													
	Size.	Form.	Quality.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Barthere	m	lov	vg	Fr														*	
Chaberte	m	ov	vg	Fr														*	
Cluster	m	ov		Fr														*	
Ford			g	Cal														*	
Franquette	l	lov	vg	Fr														*	
Gant (*Bijou*)	vl			Fr														*	
Kaghazi	l			Cal.?														*	
Mayette	vl		vg	Fr														*	
Mesange (*Paper Shell*)			vg	Fr														*	
Meylan				Fr														*	
Mission (*Los Angeles*)				Cal														*	
Parisienne	l	rob	vg	Fr														*	
Preparturiens				Fr					*										
Santa Barbara			vg	Cal														*	
Serotina	m	r	g	Fr														*	
Vourey	l	rob	vg	Fr														*	

Division II.—SUBTROPICAL AND TROPICAL FRUITS.

This division includes such species only as, under cultivation or otherwise, have so far varied that the departures from the original types are recognized under varietal names.

The climate of the portion of Florida lying south of 27° north latitude is so far modified by its semiinsular position, together with the softening influence of the almost tepid waters of the adjacent Gulf Stream, as to practically adapt it to the successful cultivation of very many strictly tropical fruits. Such, therefore, as are recommended for cultivation in this region are indicated by the letter s in connection with the starring of District No. 6, of which this territory forms a part.

Section 1.—CITRUS FRUITS.

SUBSECTION 1.—BITTER ORANGES. (*CITRUS BIGARADIA.*)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: o, oblate; ob, oblong; ov, oval; r, round. Color: d, dark; l, light; o, orange; y, yellow. Quality, scale 1 to 10: 1, very poor; 10, best. Season: a, autumn; e, early; l, late; m, medium; v, very. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: Am., America; Braz., Brazil; For., Foreign; Jap., Japan.]

Name.	Description.							Districts and starring.													
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Bitter Sweet	8-9	ro	do			dk	Fla						*									
Dwarf	8-9	ro	do			k	For						*									
Italian *Sour*	8-9					k	For						?									
Navel	8-9					k	For						?									
Phillips *Bitter Sweet*	8-9	ro	do			dk	Fla						**									
Sour	8-9	ro	do			k	Fla						*									

Section 1.—CITRUS FRUITS—Continued.

Subsection 2.—CITRONS. (*C. MEDICA.*)

Name.	Description.							Districts and starring.																	
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Lemon	8–9	ov	oy	3–4	.....	k	For						**s									
Lyman	5–6	ov	oy	3–4	.....	k	For						**s									
Orange	3–4	r	oy	6–7	.....	k	For						**s									

Subsection 3.—KUMQUATS. KINKANS. (*C. JAPONICA.*)

Marumi	2–3	r	o	.....	.....	dkm	Jap						s	*							*				
Nagami	2–3	o	o	.....	.....	dkm	Jap						**s	*							*				

Subsection 4.—LEMONS. (*C. LIMONUM.*)

Belair	5–6	oov	ly	10	a	.....	For						* s												
Eureka	5–6	ov	ly	3–4	a	.....	Cal						s												
Genoa	5–6	ov		.....	.....	.....	For																**		
Sicily	5–6	ov	ly	10	a	.....	For						s												
Villa Franca	5–6	ov	ly	10	a	.....	For						**s												

Subsection 5.—LIMES. (*C. LIMETTA.*)

Mexican	5–6	ov	ly	5–6	.....	.....	For						s												
Persian	5–6	ov	ly	.....	.....	.....	For						s												
Tahiti	7–8	ov	ly	5–6	.....	.....	For						* s												

Subsection 6.—MANDARINS. (*C. NOBILIS.*)

China	5–6	o	lo	.....	.....	.....	For						*												
Cleopatra	3–4	o	.....	.....	.....	.....	For						**												
Dancy *Tangerine*	6–7	o	r	.....	.....	.....	Fla						*												
Japan *Tangerine*	7–8	o	r	.....	.....	.....	Jap?						*												
King	7–8	o	ro	.....	.....	.....	Cal						*										†		
Satsuma	5–6	o	o	.....	.....	.....	Jap						*												
Sprack	.....	.....	.....	.....	.....	dm	Fla						†												
Tangerona	5–6	o	lo	.....	.....	.....	Braz						†												
Traveler	5–6	o	o	.....	.....	.....	?						†												

Subsection 7.—POMELOES. GRAPE FRUIT. SHADDOCKS. (*C. DECUMANA.*)

Aurantium	5–9	r	ly	3–4	lm	dm	Fla						**s												
Blood	8–9	r	voy	6–7	l	.....	For						*												
Forbidden Fruit[1]	.....	.....	.....	.....	.....	.....	For						*												
Hart	3–5	r	ly	5–6	lm	dm	Fla						* s												
Josselyn	3–5	r	ly	3–4	lm	dm	Fla						**s												
Mammoth	8–9	r	oy	6–7	l	.....	For						**												
Seedless	3–5	r	ly	6–7	.....	dm	Fla						s												
Triumph	3–6	r	ly	5–6	lm	dm	Fla						* s												
Walter	5–9	r	ly	3–4	lm	dm	Fla						**s												

[1] The name commonly applied to the entire species.

Section 1.—CITRUS FRUITS—Continued.

Subsection 8.—SWEET ORANGES. (*C. AURANTIUM.*)

Name.	Description.							Districts and starring.																	
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Acapulco	7-9	r	o	3-5	m	dm	For						*								*	
Acis	7 9	r	o	3-5	l	dm	For						*								*	
Amory *Blood*	5 6	r	or	3-5	em	dm	For						*									
Atwood *Navel*	5-6	ov	o	3-5	m	dm	For						*									
Bahia (*Washington Navel*)	7-9	rov	o	10	em	dm	For						*								**	
Baldwin *Blood*	5-6	r	cr	3-5	m	dm							†									
Beach *No. 5*	7-9	ov	or	3-5	lm	dm	Fla						*									
Bell	7-9	ov	o	3-5	m	dm	?						*								*	
Bessie			o	3-5	l	dm	Fla						**									
Boone *Early*		r	lo		ve	dm	Fla						*									
Botella	5-6	r	o	3-5	m	dm	For						*								*	
Buttercourt	5-6	r	o	10	m	dm	For						†								*	
Centennial	5-6	r	o	10	em	dm	Fla						**									
Charley *Brown*	7-9	o	o	3-5	m	dm	For						*								*	
China *Sweet*	5-6		o	3-5	m	dm	For						*									
Circassian	3-5	r	o	5-6	m	dm	For						*									
Colmar	5-6	ro	or	5-6	em	dm	For						*									
Cunningham	5-6		o	5-6	em	dm	?						*									
Drake *Star*	7-9	r	o	3-5	m	dm	For						*									
Double Navel	5-6	ov	o	5-6	m	dm	Am						*									
Dulcissima	3-4	r	o	5-6	e	dm	For						*								*	
Dummitt	7-9		o	3-5	m	dm	Fla						*									
Du Roi	5-6	r	o	3-5	lm	dm	For						**								*	
Egg (*Beach No. 1*)	3 4	ov	o	6-7	ve	dm	Fla						*								*	
Enterprise *Seedless*	5-6	r	o	5-6	e	dm	?						**									
Exquisite	5 6	r	o	5-6	m	dm	For						*								*	
Foster	5-6	r	o	3-5	e	dm	Fla						*s									
Hart *Late (Excelsior)*	5-6	ov	o	3-5	vl	dm	For						**								*	
Higley *Late*	5 6	r	o	3-5	l	dm	For						**									
Homosassa	5-6	r	o	5-6	m	dm	Fla						**								*	
Imperial *Blood*	5-6	r	or	5-6	e	dm	Fla						**									
Jaffa	5 6	r	o	10	m	dm	For						**								*	
Jaffa Blood	3 4	ov	or	10	m	dm	Fla						**									
Lamb Summer		ov	o		vl	dm	?						*									
Long	5-6	ov	o	3-5	m	dm	For						†								*	
Magnum Bonum	7-9	r	o	5-6	m	dm	Fla						*									
Majorca	5-6	r	o	10	lm	dm	For						**								*	
Maltese Blood	3-4	ov	or	10	m	dm	For						*								*	
Maltese Egg	3-5	ov	o	5-6	m	dm	For						*									
Maltese Oval	7-9	ov	o	5-6	l	dm	For						**								*	
Mays Best	5-6	r	o	5-6	m	dm	?						*									
Mays St. Michael	5-6	r	o	5-6	m	dm	?															
Mediterranean *Sweet*	7-9	ov	o	5-6	l	dm	For						*								*	
Melitensis *Navel*	7-9	rov	o	5-6	e	dm	For						†									
Nonpareil	7-9	r	o	10	em	dm	Fla						*								*	
Oblong, *Early*	5-6	ob	o	6-7	ve	dm	For						*									
Old Vini	7-9	r	o	5-6	m	dm	Fla						*								*	
Paper Rind *St. Michael*	3-4	ov	lo	3-5	lm	dm	For						*								*	
Parson *Brown*	5-6	ov	o	3-5	e	dm	?						**									
Peerless	5-6	r	o	5-6	m	dm	Fla						*									
Pineapple				5-6	m	dm	Fla						**									
Prata	3-4	r	lo	3-5	m	dm	For						*								*	
Prolific	5-6	r	o	5-6	m	dm	For						†									
Queen	5-6	ov	o	3-5	m	dm	For						†								*	
Ruby	5 6	r	or	5-6	em	dm	For															
St. Michael	5-6	r	o	3-5	m	dm	For						*								*	
St. Michael Blood	5-6	r	o	10	m	dm	For						*s									
St. Michael Egg	7-9	ov	o	7-8	e	dm	For						*s								*	
Saul *Blood*	5-6	ob	or	5-6	m	dm	For						†									
Seville, *Sweet*	3-4	r	o	3-5	ve	dm	For						l								*	
Star Calyx	7-9	r	o	3-5	m	dm	For						*s									
Sustain *Navel*	7-9	r	o	3-5	m	dm	For						‡s								*	
Thorpe *Trophy*	5-6	r	o	3-5	ve	dm	Fla						**s									
Valencia *Late*	7-9	ov	lo	3-5	l	dm	For						**s									
Vinons, *Madam*	5-6	r	o	10	m	dm	Fla						**s								*	
White	7-9	r	lo	3-5	m	dm	For						‡s								*	
Whittaker	5-6	r	o	5-6	m	dm	?						*s									

Section 2.—FIGS. (Ficus carica.)

[KEY.—Size: 2–4, small; 4–7, medium; 7–9, large. Color: b, black; bl, blue; br, brown; g, green; p, purple; v, very; w, white; y, yellow. Quality: 1–6, good; 6–10, best. Season: s, summer. Use: d, dessert; k, kitchen; n, near market. Abbreviation of name of place of origin: For., Foreign.]

Name.	Description.						Districts and starring.																			
	Size.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Adriatic, *White*	7–9	w	4–5	s	dkn	For.															
Angelique, (*Jaune Hative*)	4–7	y	1–6	s	dkn	For.															
Black Ischia	4–7	b	1–6	s	dkn	For.															
Brunswick (*Madonna*), (*Constantinople*)	7–9	p	1–6	s	dkn	For.															
Celestial (*Celeste*)	2–4	vp	6–10	s	dkn	For.															
Genoa, *Blue*	4–7	bl	1–6	s	dkn	For.															
Green Ischia (*White Ischia*) (*White Italian*)	4–7	g	1–6	s	dkn	For.															
Lemon	4–7	y	1–6	s	dkn																
Magnolia	7–9	ybr				For.															
Marseillaise, White	4–7	yw	1–6	s	dkn	For.															
Turkey, *Brown*	4–7	br	6–10	s	dkn	For.															

Section 3.—GUAVAS. (Psidium.)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: ov, oval; r, round. Color: g, green; r, red; y, yellow. Quality, scale 1 to 10: 1, very poor; 10, best. Season: a, autumn; s, summer. Use: d, dessert; k, kitchen; m, market. Abbreviations of names of places of origin: S. A., South America; W. I., West Indies; Mex., Mexico.]

Name.	Description.							Districts and starring.																		
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Apple, *P. guajava*	5–6	r	g	3–4	sa	dkm	W. I.							s	†						†	
Cattley, *P. cattleianum*	3–4	r	r	3–4	sa	dkm	S. A.														†	
Chinese (*Mexican*) *P. lucidum* (?)	3–4	r	y	3–4	sa	km	Mex.															
Common, *P. guajava*			g		sa	dkm	W. I.							s							†	
Large White, *P. guajava*	7–8	ov	g	3–4	s	dkm	W. I.								†						†	
White Winter, *P. guajava*	5–6	ov	g	3–4	a	dkm	W. I.							s	†						†	
Yellow, *P. guajava*	5–6	ov	y	3–4	s	dkm	W. I.							s	†						†	

Section 4.—KAKIS, JAPANESE PERSIMMON. (Diospyros kaki.)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: c, conical; o, oblate; ob, oblong; obo, obovate; p, pointed; r, round. Color: b, black; br, brown; c, carmine; d, dark; o, orange; r, red; s, salmon. Quality, scale 1 to 10: 1, very poor; 10, best. Season, e, early; l, late; m, medium; v, very. Use: d, dessert; m, market. Abbreviation of name of place of origin: Jap., Japan.]

Name.	Description.							Districts and starring.																		
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Costata	5–6	rcp	sr	4–5	l	dm	Jap.															
Hachiya	10	obop	br	4–5	e	dm	Jap.															
Hiyakume	7–8	ro, oboƒ	or	3–4	m	dm	Jap.															
Kurokuma	7–8	r	r	5–6	m	dm	Jap.															
Okame	7–8	ro	br	5–6	em	dm	Jap.															
Taber, *129*	5–6	rp	or	4–5	ve	dm	Jap.															
Tane Nashi	7–8	rcp	lr	10	m	dm	Jap.															
Tsuru	7–8	obp	br	3–4	vl	dm	Jap.															
Yedo-ichi	5–6	ro	dr	5–6	m	dm	Jap.															
Yemon	7–8	rcp	sr	3–4	m	dm	Jap.															
Zengi	3–4	ro	dr	3–4	ve	dm	Jap.															

Section 5.—OLIVES. (Olea europea.)

[KEY.—Size: l, large; m, medium; s, small; v, very. Form: o, oblique; ob, obovate; ov, oval; r, round. Color: b, black; d, dark; p, purple; v, violet. Abbreviations of names of places of origin: Fr., France.]

Name.	Description.				Districts and starring.															
	Size.	Form.	Color.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Atrorubens (*Saillens*)	sm	rov	vb	Fr														*	
Atro-Vialacea	m	rov		?														*	
Broad Leaf *Mission*	m	ovo		Cal														*	
Caillon *Rubra*	tos	ov	b	Fr														*	
Columella	m	ov	dp	Fr														*	
Corregiola (*Grossajo*) (*Frantojo*)	m	ob		Italy														*	
Early Mission	m			Cal														*	
Hervaza	l	rov		Italy														*	
Lucques	m	ovob		Italy														*	
Macrocarpa	vl	ovob		Italy?														*	
Manzanillo	l	rov		Spain														*	
Mission	m	ov		Cal														*	
Narrow Leaf Mission	ml			Cal														*	
Nevadillo *Blanco*		ovo		Spain														*	
Oblitza	l			Italy														*	
Oliviere	m	ov		Fr														*	
Pendoulier	l			Fr														*	
Pendulina	ml	ov		Fr														*	
Picholine (*Oblonga*)	m			Fr														*	
Pigale	ml	ov		Fr														*	
Polymorpha	vl			Fr														*	
Razzo (*Frantojano*)	m	ov		Italy														*	
Redding *Picholine*	s	ov		Fr														*	
Regalis		rov	pb	Fr														*	
Ronget	s	r		Fr														*	
Rubra	sm	ovo		Fr.?														*	
Uvaria	sm	ov	dp	Fr														*	
Verdale	sm	rov		Fr														*	

Section 6.—PINEAPPLES. (Ananassa sativa.)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: c, conical; ob, oblong; r, round. Color: d, dark; l, light; r, red; y, yellow. Quality, scale 1 to 10: 1, very poor; 10, best. Season, s, summer. Use: d, dessert; k, kitchen; m, market. Abbreviation of name of place of origin. For., Foreign.]

Name.	Description.						Districts and starring.													
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Abachi (*Abakka*)	5-6	ob		10	s	dk	For						*s								*	
Albert, *Prince*	8-9	c		10	s	dk	For						‡s								*	
Beatrice, *Lady*	8-9	c		10	s	dk	For						‡s								*	
Black Antigua	8-9	ob	d	10	s	dk	For						*s								*	
Black Prince	8-9	c		10	s	dk	For						‡s								†	
Blood	5-6			4-5	s	dk	For						‡s								*	
Carrington, *Lord*	8-9	c		10	s	dk	For						‡s									
Cayenne, *Smooth*	8-9	c		4-5	s	dk	For						*s								*	
Crown Prince	8-9	c		10	s	dk	For						‡s								*	
Egyptian *Queen*	5-6	c	y	10	s	dkm	For						s								*	
Jamaica, *Black*	8-9	ob	dy	10	s	dk	For						*s								*	
Kew, *Mammoth*	10			10	s	dk	For						‡s									
Porto Rico	10	r	y	4-5	s	dk	For						*‡s								*	
Ripley Queen	5-6	c	y	10	s	dk	For						*s								*	
Rothschild, *Charlotte*	5-6	c		10	s	dk	For						*s								*	
Spanish, *Red*	5-6	r	ry	5-6	s	dkm	For						*s								*	
Sugar Loaf	5-6	c	y	10	s	dk	For						*s								*	
White Antigua	5-6	ob	l	10	s	dk	For						‡s								†	

Section 7.—POMEGRANATES. (Punica granatum.)

[KEY.—Size, scale 1 to 10: 1, very small; 10, very large. Form: ov, oval; r, round. Color: r, red; v, violet; y, yellow. Quality, scale 1 to 10: 1, very poor; 10, best. Season: a, autumn. Use: d, dessert. Abbreviation of name of place of origin: Am., America.]

Name.	Description.						Districts and starring.														
	Size.	Form.	Color.	Quality.	Season.	Use.	Origin.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Acid	10	ov	ry	.....	a	d	Am.															
Dwarf	3-4	r	r	7-8	a	d	Am.?					*										
Purple	8-9	ov	ry	10	a	d	Am.							*								
Sweet	8-9	r	r	10	a	d	Am.															
Violet	10	r	v	10	a	d	Am.?															

Division III.—NATIVE AND INTRODUCED FRUITS AND NUTS GROWN IN THE OPEN AIR.

This division includes such species of native and introduced species of fruits and nuts grown under cultivation in the open air in the United States and Canada as are not included in Divisions I and II.

Section 1.—FRUITS.

Botanical name.	Common name.	Origin.	Districts and starring.														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Achras Sapota Linn.	Sapodilla	West Indies															
Adansonia digitata Linn.	Baobab, Monkey Bread, Sour Bread.	Africa						†									
Aegle marmelos Correa	Bengal Quince	India													†	*	
Akebia quinata Decaisne		Japan															
Amelanchier alnifolia Nutt	Western Dwarf Juneberry.	Native														*	
Canadensis T. and G.	Serviceberry, Shadberry, Juneberry.	Native															
var. oblongifolia T. and G.	Dwarf Juneberry	Native															
Anona cherimolia Mill.	Cherimoya, Cherimolia, Jamaica Apple.	S. America						†									
glabra Linn.	Pond Apple	Florida							*								
muricata Linn.	Soursop	West Indies							†							†	
reticulata Linn.	Custard Apple, Bullock's Heart.	Trop. America.															
squamosa Linn.	Sugar Apple, Sweetsop.	West Indies						*									
Antidesma Bunius Spreng.		Malaysia						†								*	
Arbutus unedo Linn.	Strawberry Tree	Europe															
Artocarpus incisa Linn.	Breadfruit	Polynesia						*									
integrifolia Linn.	Jackfruit, Jaca	India						*									
Asimina grandiflora Dunal.	Papaw	Native															
triloba Dunal.	Papaw, Pawpaw	Native															
Averrhoa Bilimbi Linn.	Bilimbi	Ins. India						†								†	
Carambola Linn.	Carambola	India						†									
Berberis Aquifolium Pursh		Native															
trifoliolata Morie	Aljarita	Texas														*	
vulgaris Linn.	Barberry, Berberry	Europe															
Carica Papaya Linn.	Papaw, Melon Papaw.	Trop. America.															
Carrissa Arduina, Lam.	Amatungula	Africa															
Carissa Carandas Linn.	Carauuda, Christ Thorn.	India															
Casimiroa edulis Le Clare	White Sapota, Zapote Blanco.	Mexico														*	
Ceratonia Siliqua Linn.	Carob, Karoub, Algaroba, St. John's Bread.	Asia, Africa						†									
Cereus triangularis Mill.	Strawberry Pear	Trop. America.															
Chrysobalanus icaco Linn.	Cocoa Plum	Florida															

Section 1.—FRUITS—Continued.

Botanical name.	Common name.	Origin.	Districts and starring.														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Citrus bergamium Risso...	Bergamot Orange ...	Asia.....						*									
trifoliata Linn.....	Trifoliate Orange, Hardy Orange.	Japan		*	*	*	*	*	*	*	*				*	*	*
Coccoloba uvifera Linn....	Sea Grape, Shore Grape.	Eur., Asia...						*									
Cornus Mas Linn.....	Carnelian Cherry....	Eur., Asia...		*	*												
Crataegus coccinea Linn ..	Haw, Thornapple...	Native.....		*	*	*	*	*	*	*	*				*		
var. mollis T. and G.....	Haw	Texas							*								
Cyphomandra betacea Sendt.	Tree Tomato.....	Trop. America.						*									
Diospyros texana Scheele..	Black Persimmon...	Native.....							*						*		
virginiana Linn	Persimmon.....	Native.....		*	*	*	*	*	*	*	*						
Elaeagnus multiflora Thunb.	Gouni	Japan		*	*	*	*		*	*	*					*	*
umbellata Thunb.	.....	Asia			*												
Eriobotrya japonica Lindl..	Loquat, Japanese Medlar.	Japan						*								*	
Erythea edulis S. Watson..	Brazil Cherry	Guad. Island.														*	
Eugenia brasiliensis Lam..	.....	S. America...						†								*	
jambos Linn.....	Rose Apple	E. Indies.....						*									
uniflora Linn	Surinam Cherry.....	S. America...															
Feronia elephantum Corr..	Elephant Apple.....	E. Indies.....						*									
Ficus glomerata Roxb.....	Cluster Fig	India						†								†	
Fragaria californica Cham. and Sch.	California Strawberry.	California....														*	*
chiloensis Duchesne.....	Chile Strawberry ...	S. America...		†	†	†											†
collina Ehr.	Green Strawberry, Hill Strawberry.	Europe		*	*	*											
elatior Ehr	Hautbois Strawberry	Europe	*	*	*	*			*								
Fragaria vesca Linn.....	English Wild Strawberry, Alpine.	Eur., native .	*	*	*							*	*				*
virginiana Duchesne.....	Wild Strawberry....	Native.....	*		*	*	*										
virginiana var. illinoesis Gray.	Western Wild Strawberry.	Native.....		*					*	*	*	*					
Garcinia mangostana Linn.	Mangosteen.....	Java.....						†									
Glycosmis citrifolia Lindl..	.....	China														†	
Hovenia dulcis Thunb ..	.....	Japan			†											†	
Lucuma mammosa Gaert...	Mammee Sapota.....	.....						*									
rivicoa var. angustifolia Gaert.	Egg Fruit; Tiess, Canistel.	.....						*									
Mammea americana Linn..	Mammee Apple	Jamaica						*									
Mangifera indica Linn.....	Mango	India						*								†	
Melicocca bijuga Linn.....	Ginep, Spanish Lime	Trop. America.						*								†	
Monstera deliciosa Liebm..	Ceriman	Mexico						†								†	
Morus alba Linn.....	White Mulberry	Asia.....	*	*	*	*	*	*	*	*	*				*		
nigra Linn.....	Black Mulberry.....	Native.....	*	*		*	*	*	*	*	*				*		
rubra Linn	Red Mulberry.....	Native.....	*	*	*	*	*	*	*	*	*				*		
Musa chinensis Sweet, syn. *M. Cavendishii* Lambert.	Dwarf Banana, Chinese Banana.	China						*								*	
Musa corniculata Lour.....	Lubang	Ins. India....						†									
paradisiaca Linn.....	Plantain	India						*								†	
sapientum Linn.....	Banana, Hog Banana	India						*								†	
Myrica Nagi Thunb., syn. M. rubra Sieb. and Zucc.	.....	Asia.....						†								†	
Nephelium Lit-chi Cambess.	Litchi, Lee Chee	China.....						†								†	
Nuttalia cerasiformis T. and G.	Oso Berry.....	California														*	
Opuntia Ficus-Indica Mill	Indian Fig.....	Trop. America.						*	*						*	*	
Tuna Miller	Prickly Pear	W. Indies....					*	*	*						*	*	
vulgaris Miller.....	Prickly Pear.....	Native.....		*	*	*	*	*	*						*	*	
Passiflora edulis Sims.....	Granadilla	S. America....					*	*	*							*	*
incarnata Linn.....	May Apple, May-pop.	Native.....			*		*	*	*						*		
laurifolia Linn.....	Water Lemon.....	W. Indies....						*							*		
maliformis Linn	Sweet Cup, Calabash.	W. Indies						*									
quadrangularis Linn.....	Granadilla	Brazil						*									
Pereskia aculeata Miller...	Barbados Gooseberry.	W. Indies....						*									
Persea gratissima Gaert ...	Aguacate, Avocado, Alligator Pear.	Mexico						*								*	
Phoenix dactylifera Linn ..	Date Palm.....	Africa						*								*	
reclinata Jacquin.....	.....	Africa						*								*	
sylvestris Roxb.....	Wild Date of India, Wine Palm.	India														*	
Phyllanthus distichus Muell.	Otaheite Gooseberry.	Ins. India....						*									

Section 1.—FRUITS—Continued.

Botanical name.	Common name.	Origin.	Districts and starring. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Physalis Alkekengi Linn..	Strawberry Tomato. Winter Cherry.	Persia	
peruviana Linn	Cape Gooseberry	S. America	
Prunus Besseyii Bailey	Western Dwarf Cherry.	Native	
Capollin Zucc	Capullin, Capulino	Mexico	
dasycarpa Ehr	Purple Apricot, Black Apricot.	Asia	
demissa Walp	California Wild Cherry.	California	
emarginata Walp			
ilicifolia Walp	Islay	California	
Mahaleb Linn	Mahaleb Cherry	Eur., Asia	
maritima Wang	Beach Plum	Native	
Mume Lieb. and Zucc	Chinese or Japanese Apricot.	Asia	
pennsylvanica Linn	Pin Cherry. Bird Cherry.	Native	
pumila Linn	Dwarf Cherry. Sand Cherry.	Native	
Simonii Carriere	Simon or Apricot Plum.	China	
subcordata Benth	Wild Plum of Calif.	California	
Watsoni Sargent	Sand Plum	Native	
Punica Granatum Linn	Pomegranate	Afr., Asia	
Pyrus Chinensis Poiret	Chinese Quince	Asia	
germanica J. Hooker	Medlar	Eur., Asia	
japonica Thunb	Japanese Quince	Japan	
coronaria Linn	Native Crabapple	Native	
rivularis Dougl	Oregon Crab	Native	
salicifolia Pall		Asia	
Sorbus Gaert	Service Tree	Eur., Afr	
Rhodomyrtus tomentosa Wight.	Downy Myrtle	China	
Ribes aureum Pursh	Missouri Currant	Native	
Rubus crataegifolius Bunge.	Siberian Raspberry	Asia	
deliciosus Torr		Native	
microphyllus Linn., syn. *R. palmatus* Thunb.		Japan	
phoenicolasius Maxim	Japanese Raspberry. Wineberry.	Japan	
rosaefolius Sm., syn. *sorbifolius*.	Strawberry-Raspberry.	Asia	
trivialis Mich	Southern Dewberry	Native	
ursinus Cham. & Schlect	Oregon Dewberry	Native	
Sambucus canadensis Linn.	Elderberry	Native	
Shepherdia argentea Nutt	Buffalo Berry	Native	
Solanum muricatum Ait	Pepino	S. America	
Tamarindus Indica Linn	Tamarind	Africa	
Triphasia Aurantiola Lour.	Limeberry	China	
Vaccinium corymbosum Linn.	Swamp Blueberry, Highbush Huckleberry.	Native	
macrocarpon Ait	American Cranberry	Native	
pennsylvanicum Lam	Blueberry	Linn	
Vangueria madagascarensis J. F. Gmel.	Voa-vanga	Madagascar	
Viburnum Opulus Linn	Highbush Cranberry	Native	
Vitis arizonica Engelm		Arizona	
Vitis Berlandieri Planch		Texas	
californica Benth		California	
candicans Engelm	Mustang Grape of Texas.	Texas	
cinerea Engelm	Sweet Winter Grape	Native	
cordifolia Lam	Winter Grape. Frost Grape.	Native	
Champini Planchon		Texas	
Doaniana Muns	Doan's Grape	Native	
rupestris Scheele	Sand Grape	Native	
Solonis Hort. Berol		Native	
Ximenia americana Linn	"Alvarillo del Campo."	Mexico	
Zizyphus Jujuba Lamarck	Jujube	India	
sativa Gaertn	Jujube of S. Eur	Asia	

Section 2.—NUTS.

Botanical name.	Common name.	Origin.	Districts and starring.														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Aleurites triloba Forst....	Candlenut..........	Asia															
Anacardium occidentale Linn.	Cashew Nut........	India						†								*	
Castanea dentata Marsh...	American Chestnut..	Native		*		*	*			*		†				†	
pumila Mill.............	Chinkapin, Chincapin, Chinquapin.	Native				*		*	*	*	*				*		
Calodendrum capensis Thunb.	Cape Chestnut......	S. Africa														*	
Castanopsis chrysophylla A. De C.	Western Chinkapin.	Native														*	*
Castanospermum australe Cunn.	Moreton Bay Chestnut.	Australia														*	
Cocos nucifera Linn.......	Cocoanut..........	E. Indies															
Cola acuminata Schott and Endlich.	Kola, Bissy, Goora..	Africa						?									
Corylus americana Walt ..	American Hazel....	Native		*	*	*				*							
californica Rose........	California Hazel....	Native														*	*
rostrata Ait	Beaked Hazel.......	Native	*	*	*	*		*		*	*					*	*
Gingko biloba Linn	Ginko, Maidenhair Tree, Pa koo.	Asia		*												*	
Gevuina Avellana Molina.	Chilean Nut.........	Chili														*	
Hicoria glabra Britt	Pignut	Native									*						
laciniosa Sarg...........	Shellbark, Big Shellbark.	Native		*	*	*				*	*						
ovata Britt	Shagbark, Little Shellbark.	Native			*					*	*	*				†	†
Jubaea spectabilis Humb..	Coquito, Small Cocoanut.	Chili														†	
Juglans californica Wats ..	California Black Walnut.	California														†	†
cinerea Linn............	Butternut, White Walnut, Oilnut.	Native		*						*	*						
cordiformis Maxim......	Japanese Walnut....	Japan													*	*	
mandshurica Maxim.....	Japanese Walnut ...	Asia		*												*	
nigra Linn..............	Black Walnut.......	Native					*		*	*	*	*					*
Sieboldiana Maxim......	Japanese Walnut....	Japan			*										*	*	*
Macadamia ternifolia F.V. Muell.	Queensland Nut.....	Australia														*	
Pistacia Terebinthus Linn.	Turpentine Tree	Europe, Africa, Asia.						†									
vera Linn..............	Pistachio...........	Syria						†								*	
Sapium sebiferum Roxb...	Tallow Nut.........	China					*										
Terminalia Catappa Linn..	Tropical Almond....	E. Indies						*									
Torreya nucifera Lieb. & Zucc.	....	Japan														*	

THE SOCIETY'S RULES FOR EXHIBITING AND NAMING FRUITS.

The rules of the American Pomological Society for exhibiting and naming fruits are as follows:

SECTION I.

NAMING AND DESCRIBING NEW FRUITS.

Rule 1.—The originator or introducer (in the order named) has the prior right to bestow a name upon a new or unnamed fruit.

Rule 2.—The society reserves the right, in case of long, inappropriate, or otherwise objectionable names, to shorten, modify, or wholly change the same, when they shall occur in its discussions or reports; and also to recommend such changes for general adoption.

Rule 3.—The name of a fruit should, preferably, express, as far as practicable by a single word, a characteristic of the variety, the name of the originator, or the place of its origin. Under no ordinary circumstances should more than a single word be employed.

Rule 4.—Should the question of priority arise between different names for the same variety of fruit, other circumstances being equal, the name first publicly bestowed will be given precedence.

Rule 5.—To entitle a new fruit to the award or commendation of the society, it must possess (at least for the locality for which it is recommended) some valuable or desirable quality, or combination of qualities, in a higher degree than any previously known variety of its class and season.

Rule 6.—A variety of fruit having been once exhibited, examined, and reported upon as a new fruit by a committee of the society, will not thereafter be recognized as such, so far as subsequent reports are concerned.

SECTION II.

COMPETITIVE EXHIBITS OF FRUITS.

Rule 1.—A plate of fruit must contain six specimens, no more, no less, except in the case of single varieties not included in collections.

Rule 2.—To insure examination by the proper committees, all fruits must be correctly and distinctly labeled, and placed upon the tables during the first day of exhibition.

Rule 3.—The duplication of varieties in a collection will not be permitted.

Rule 4.—In all cases of fruits intended to be examined and reported by committees, the name of the exhibitor, together with a complete list of the varieties exhibited by him, must be delivered to the secretary of the society on or before the first day of the exhibition.

Rule 5.—The exhibitor will receive from the secretary an entry card, which must be placed with the exhibit, when arranged for exhibition, for the guidance of committees.

Rule 6.—All articles placed upon the tables for exhibition must remain in charge of the society till the close of the exhibition, to be removed sooner only upon express permission of the person or persons in charge.

Rule 7.—Fruits or other articles intended for testing, or to be given away to visitors, spectators, or others, will be assigned a separate hall, room, or tent, in which they may be dispensed at the pleasure of the exhibitor, who will not, however, be permitted to sell and deliver articles therein, nor to call attention to them in a boisterous or disorderly manner.

SECTION III.

COMMITTEE ON NOMENCLATURE.

Rule 1.—It shall be the duty of the president, at the first session of the society, on the first day of an exhibition of fruits, to appoint a committee of five expert pomologists, whose duty it shall be to supervise the nomenclature of the fruits on exhibition, and in case of error to correct the same.

Rule 2.—In making the necessary corrections they shall, for the convenience of the examining and awarding committees, do the same at as early a period as practicable, and in making such corrections they shall use cards readily distinguishable from those used as labels by exhibitors, appending a mark of doubtfulness in case of uncertainty.

SECTION IV.

EXAMINING AND AWARDING COMMITTEES.

Rule 1.—In estimating the comparative values of collections of fruits, committees are instructed to base such estimates strictly upon the varieties in such collections which shall have been correctly named by the exhibitor prior to action thereon by the committee on nomenclature.

Rule 2.—In instituting such comparison of values, committees are instructed to consider: First, the values of the varieties for the purposes to which they may be adapted; second, the color, size, and evenness of the specimens; third, their freedom from the marks of insects, and other blemishes; fourth, the apparent carefulness in handling, and the taste displayed in the arrangement of the exhibit.