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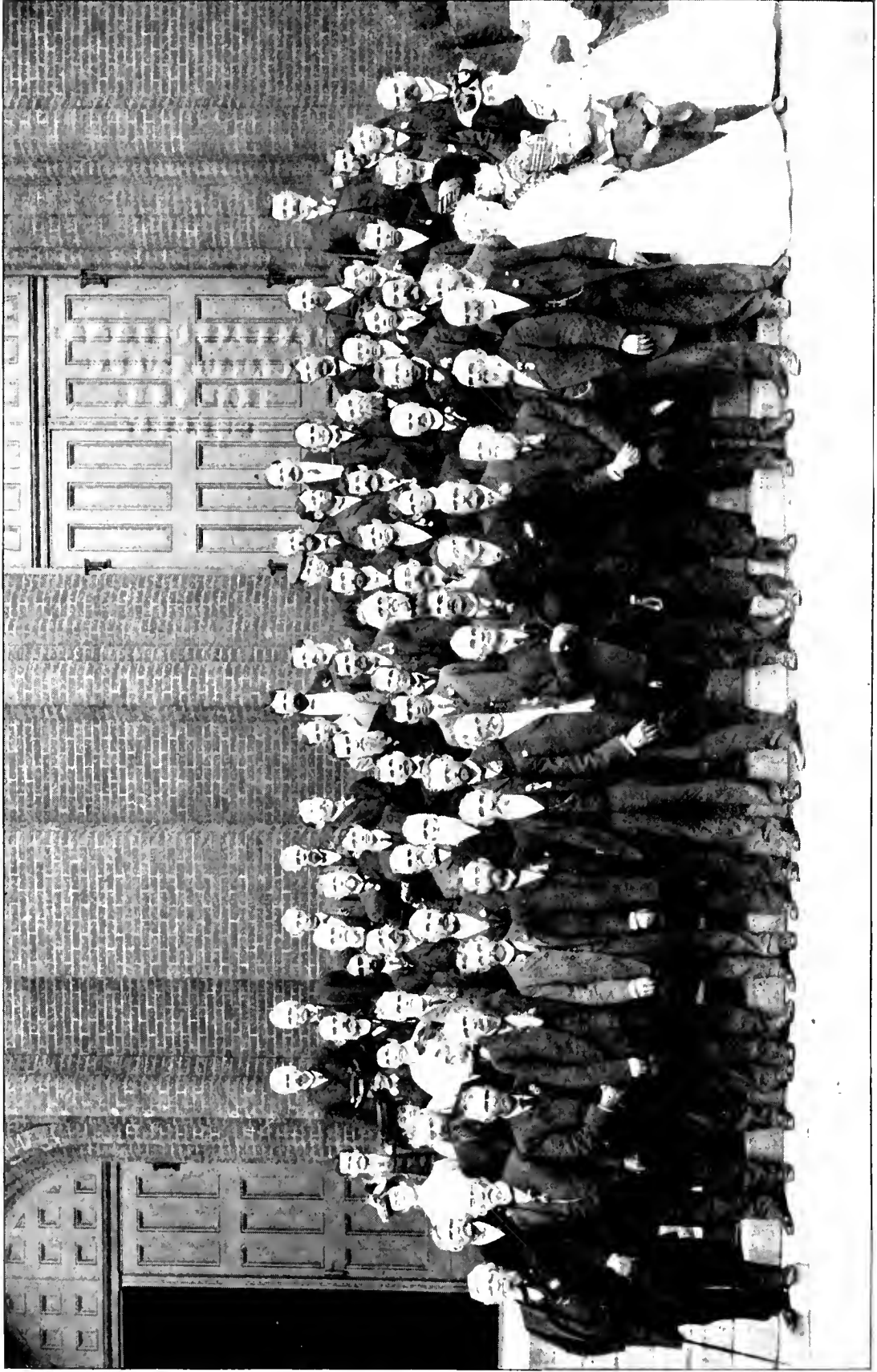
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MEMBERS IN ATTENDANCE AT AMERICAN POMOLOGICAL SOCIETY, KANSAS CITY, MO., SEPTEMBER 19-21, 1905

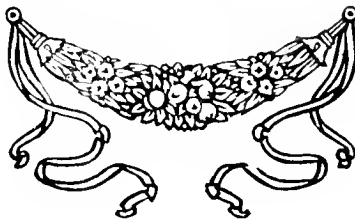
# PROCEEDINGS OF THE TWENTY-NINTH SESSION OF THE AMERICAN POMOLOGICAL SOCIETY

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HELD IN KANSAS CITY  
SEPTEMBER 19-21 :: 1905

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*On* Invitation of the Missouri State Horticultural Society, the Kansas City Chamber of Commerce and the State Horticultural Societies of the Middle West



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*Compiled by the Secretary :: Published by the Society*

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# American Pomological Society

Organized 1848.

Incorporated 1887.

## ACT OF INCORPORATION.

---

COMMONWEALTH OF MASSACHUSETTS, 1887.

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

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

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

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

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.

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

## BY-LAWS.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Officers and Standing Committees  
of the  
**American Pomological Society**  
For 1905-1906

---

PRESIDENT:

L. A. GOODMAN, KANSAS CITY, MISSOURI.

FIRST VICE PRESIDENT:

T. V. MUNSON, DENISON, TEXAS.

SECRETARY:

JOHN CRAIG, ITHACA, NEW YORK.

TREASURER:

L. R. TAFT, AGRICULTURAL COLLEGE, MICHIGAN.

STATE VICE PRESIDENTS:

Alabama	W. F. Heikes, Huntsville
Arizona	H. W. Adams, Glendale
Arkansas	W. G. Vincenheller, Fayetteville
British Columbia	R. M. Palmer, Victoria
California	Luther Burbank, Santa Rosa
Colorado	W. S. Coburn, Paonia
Connecticut	N. S. Platt, New Haven
Delaware	S. H. Derby, Woodside
District of Columbia	G. B. Brackett, Washington
Florida	G. L. Taber, Glen St. Mary
Georgia	P. J. A. Berckmans, Jr., Augusta
Hawaii	J. E. Higgins, Honolulu
Idaho	A. McPherson, Boise
Illinois	H. M. Dunlap, Savoy
Indiana	J. A. Burton, Mitchell
Iowa	C. G. Patten, Charles City
Kansas	F. W. Dixon, Holton
Kentucky	C. W. Mathews, Lexington
Louisiana	F. H. Burnette, Baton Rouge
Maine	W. M. Munson, Orono
Manitoba	S. A. Bedford, Brandon
Maryland	J. S. Harris, Coleman
Massachusetts	O. B. Hadwen, Worcester
Michigan	C. J. Monroe, South Haven
Minnesota	S. B. Green, St. Anthony Park

Mississippi	A. M. Augustine, West Point
Missouri	C. H. Dutcher, Warrensburg
Montana	F. B. Linfield, Bozeman
Nebraska	G. A. Marshall, Arlington
Nevada	Ross Lewers, Franktown
New Hampshire	C. C. Shaw, Milford
New Jersey	I. J. Blacknell, Titusville
New Mexico	Parker Earle, Roswell
New York	F. M. Hexamer, 52 Lafayette Place, New York
North Carolina	J. Van Lindley, Pomona
North Dakota	C. B. Waldron, Fargo
Northwest Territories	Angus Mackay, Indian Head
Nova Scotia	R. W. Starr, Wolfville
Ohio	W. R. Lazenby, Columbus
Oklahoma	O. M. Morris, Stillwater
Ontario	A. H. Pettit, Grimsby
Oregon	E. L. Smith, Hood River
Pennsylvania	H. A. Chase, 1430 S. Penn. Sq., Philadelphia
Prince Edward Island	Rev. A. E. Burke, Alberton
Porto Rico	H. C. Hendrickson, Mayaguez
Quebec	N. E. Jack, Chateauguay Basin
Rhode Island	J. L. Carpenter, Cumberland
South Carolina	C. U. Shepard, Summerville
South Dakota	H. C. Warner, Forestburg
Tennessee	John Wieland, Knoxville
Texas	E. W. Kirkpatrick, McKinney
Utah	Thomas Judd, St. George
Vermont	Wm. Stuart, Burlington
Virginia	S. B. Woods, Charlottesville
Washington	N. G. Blalock, Walla Walla
West Virginia	S. W. Moore, Elwell
Wisconsin	S. H. Marshall, Madison
Wyoming	B. C. Buffum, Laramie

## STANDING COMMITTEES

## EXECUTIVE COMMITTEE

C. L. Watrous	Des Moines, Iowa
W. C. Barry	Rochester, New York
C. W. Garfield	Grand Rapids, Michigan
G. L. Taber	Glen St. Mary, Florida
W. T. Macoun	Ottawa, Canada

## FINANCE COMMITTEE

Wyman Elliott	Minneapolis, Minnesota
W. C. Strong	Waban, Massachusetts
E. M. Pollard	Nehawka, Nebraska

## GENERAL FRUIT COMMITTEE

*Chairman, S. A. BEACH, AMES, IOWA.*

Alabama	W. F. Heikes, Huntsville
Arizona	V. A. Clark, Phoenix
Arkansas	Ernest Walker, Fayetteville
British Columbia	R. M. Palmer, Victoria
California	E. J. Wickson, Berkeley
Colorado	Wendell Paddock, Ft. Collins
Connecticut	N. S. Platt, New Haven
Delaware	J. W. Killen, Felton
District of Columbia	W. N. Irwin, Dept. of Agr., Washington
Florida	P. H. Rolfs, Lake City
Georgia	S. H. Rumph, Marshallville
Hawaii	B. O. Clark, Wahiawa
Idaho	Chas. P. Hartley, Caldwell
Illinois	G. J. Foster, Normal
Indiana	C. M. Hobbs, Bridgeport
Iowa	Wesley Green, Des Moines
Kansas	F. W. Dixon, Holton
Kentucky	C. W. Mathews, Lexington
Louisiana	F. H. Burnette, Baton Rouge
Maine	D. H. Knowlton, Farmington
Manitoba	S. A. Bedford, Brandon
Maryland	W. N. Hutt, College Park
Massachusetts	A. F. Stevens, Wellesley
Michigan	C. A. Ilgenfritz, Monroe
Minnesota	A. W. Latham, Minneapolis
Mississippi	A. B. McKay, Agricultural College
Missouri	Paul Evans, Mt. Grove
Montana	R. W. Fisher, Bozeman
Nebraska	R. A. Emerson, Lincoln
Nevada	R. H. McDowell, Reno
New Brunswick	S. L. Peters, Queenstown
New Hampshire	F. W. Rane, Durham

New Jersey	D. A. Vanderveer, Freehold
New Mexico	L. B. Prince, Santa Fé
New York	W. T. Mann, Barker
North Carolina	T. L. Brown, Asheville
North Dakota	C. B. Waldron, Fargo
Northwest Territories	George Lang, Indian Head
Nova Scotia	F. C. Sears, Wolfville
Ohio	U. T. Cox, Bradrick
Oklahoma	H. H. Cummins, Cleo
Ontario	H. L. Hutt, Guelph
Oregon	E. R. Lake, Corvallis
Pennsylvania	G. C. Butz, State College
Porto Rico	F. D. Gardner, Mayaguez
Quebec	Robert Hamilton, Grenville
Rhode Island	F. W. Card, Kingston
South Carolina	H. B. Buist, Rock Hill
South Dakota	N. E. Hansen, Brookings
Tennessee	C. A. Keffer, Knoxville
Texas	E. J. Kyle, College Station
Utah	J. A. Wright, Ogden
Vermont	D. C. Hicks, North Clarendon
Virginia	R. A. Wickersham, Winchester
Washington	M. McDonald, Salem
West Virginia	C. M. Davidson, Huntington
Wisconsin	E. P. Sandsten, Madison
Wyoming	Aven Nelson, Laramie

## COMMITTEE ON NEW FRUITS OF AMERICAN ORIGIN

*Chairman*, S. B. GREEN, ST. ANTHONY PARK, MINNESOTA.

Districts 1 and 2	L. R. Taft, Agricultural College, Michigan
Districts 3 and 4	W. B. Alwood, Charlottesville, Virginia
Districts 5 and 7	R. C. Berckman, Augusta, Georgia; F. W. Muller, Garrison, Texas
District 6	H. H. Hume, Raleigh, North Carolina
District 8	A. T. Erwin, Ames, Iowa; J. A. Lopeman, Ænid, Oklahoma
District 9	Frederick Cranefield, Madison, Wisconsin
Districts 10, 13, and 14	Wendell Paddock, Ft. Collins, Colorado
Districts 11, 12 and 19	Fabian Garcia, Mesilla Park, New Mexico
Districts 15 and 16	M. M. McDowell, Salem, Oregon
Districts 17 and 18	E. J. Wickson, Berkeley, California

## COMMITTEE ON FOREIGN FRUITS

*Chairman*, G. L. TABER, GLEN ST. MARY, FLORIDA.

P. J. Berckmans	Augusta, Georgia
D. G. Fairchild	Department of Agriculture, Washington, D. C.
B. von Herff	93 Nassau St., New York City, N. Y.
F. H. Burnette	Baton Rouge, Louisiana
W. S. Thornber	Pullman, Washington
W. T. Macoun	Ottawa, Canada
W. T. Swingle	Department of Agriculture, Washington, D. C.



## COMMITTEE ON TROPICAL AND SUB-TROPICAL FRUITS

*Chairman, A. A. BOGGS, COCOANUT GROVE, FLORIDA.*

B. O. Clark .....	Wahiawa, Hawaii
G. C. Roeding .....	Fresno, California
H. J. Webber.....	Department of Agriculture, Washington, D. C.
C. P. Taft .....	Orange, California
Mrs. J. J. Haden.....	Cocoanut Grove, Florida
G. Onderdonk .....	Nursery, Texas
W. M. Ward.....	Phoenix, Arizona
F. D. Gardner .....	Mayaguez, Porto Rico

## COMMITTEE ON NOMENCLATURE

*Chairman, G. B. BRACKETT, DEPT. OF AGR., WASHINGTON, D. C.*

G. Harold Powell....	Department of Agriculture, Washington, D. C.
Benj. Buckman .....	Farmingdale, Illinois
L. R. Taft .....	Agricultural College, Michigan
Harry Stabler.....	Yuba City, California
A. G. Gulley .....	Storrs, Connecticut
J. C. Whitten.....	Columbia, Missouri

## COMMITTEE ON REVISION OF CATALOGUE

*Chairman, W. H. RAGAN, DEPT. OF AGR., WASHINGTON, D. C.*

E. J. Wickson .....	Berkeley, California
U. P. Hedrick.....	Geneva, New York
E. L. Smith .....	Hood River, Oregon
S. H. Fulton .....	Washington, D. C.
N. S. Platt .....	New Haven, Connecticut
H. E. Van Deman.....	Parksley, Virginia

## SPECIAL COMMITTEE ON SCORE CARD

*Chairman, F. A. WAUGH, AMHERST, MASSACHUSETTS.*

W. A. Taylor.....	Department of Agriculture, Washington, D. C.
J. T. Stinson .....	Springfield, Missouri
John Craig .....	Ithaca, New York
E. S. Hubbard .....	Federal Point, Florida

## SPECIAL COMMITTEE ON INSPECTING AND GRADING FRUIT

*Chairman, C. H. WILLIAMSON, QUINCY, ILLINOIS*

J. H. Hale.....	South Glastonbury, Connecticut
F. D. Cummings.....	Portland, Maine
A. McNeill .....	Ottawa, Canada
G. H. Powell.....	Washington, D. C.
A. A. Boggs .....	Cocoanut Grove, Florida
C. L. Watrous.....	Des Moines, Iowa

# LIST OF MEMBERS OF THE AMERICAN POMOLOGICAL SOCIETY

## LIFE MEMBERS

Allan, Alex. McD.....	Goderich, Ontario.
Allen, Abner.....	College Park, Cal.
Allen, Edwin.....	New Brunswick, N. J.
Alwood, Wm. B.....	Charlottesville, Va.
Appleton, Francis H.....	251 Marlboro St., Boston, Mass.
Ash, John.....	Pomfret Center, Conn.
Atkins, Chas. G.....	Bucksport, Me.
Babcock, E. F.....	Waitsburg, Wash.
Babcock, J. Lyman.....	Norfolk, Va.
Baird, David.....	Baird, N. J.
Barnes, Wm. H.....	State Capitol, Topeka, Kas.
(For Kansas State Horticultural Society.)	
Barry, Wm. C.....	Rochester, N. Y.
Bassett, S. C.....	Lincoln, Neb.
(For State Board of Agriculture.)	
Beach, S. A.....	Ames, Iowa.
(For Iowa State College.)	
Beadle, D. W.....	307 Givens St., Toronto, Ont.
Beal, W. J.....	Agricultural College, Mich.
(For Michigan Agricultural College.)	
Berckmans, Prosper J.....	Upper Monclair, N. J.
Berryhill, J. G.....	Des Moines, Ia.
Black, Chas.....	Highstown, N. J.
Blackmore, John C.....	Christchurch, Canterbury, New Zealand.
Blair, J. C.....	Urbana, Ill.
Blanchard, N. W.....	Santa Paula, Cal.
Block, A.....	Santa Clara, Cal.
Bridgeman, Alfred.....	Newburgh, N. Y.
Briggs, G. R.....	Plymouth, Mass.
Brill, Francis.....	Hempstead, N. Y.
Buffum, B. C.....	Laramie, Wyoming.
(For University of Wyoming.)	
Butz, Geo. C.....	State College, Pa.
(For Pennsylvania State College.)	
Calkins, John S.....	Station M., Los Angeles, Cal.
Card, F. W.....	Kingston, R. I.
(For Rhode Island Experiment Station.)	
Chase, Arthur H.....	Concord, N. H.
(For State Library.)	
Chase, Howard A.....	1430 S. Penn. Square, Philadelphia, Pa.
Chase, Lewis.....	Rochester, N. Y.
Clapp, Wm. Chaning.....	Dorchester, Mass.
Clark, Edmund S.....	144 Essex St., Boston, Mass.
Coburn, W. S.....	Paonia, Colo.
Colman, N. J.....	St. Louis, Mo.

- Cone, Moses H.....Blowing Rock, N. C.  
Cook, David C.....Chicago, Ill.  
Cook, M. S.....Avondale, Pa.  
Craig, John.....Ithaca, N. Y.  
Crandall, C. S.....Urbana, Ill.  
Davis, J. C. Bancroft.....1621 H. St., N. W., Washington, D. C.  
Devol, W. S.....Redlands, Cal.  
Dreer, W. F.....714 Chestnut St., Philadelphia, Pa.  
Durell, E. H.....Woodbury, N. J.  
Durfee, Geo. B.....Fall River, Mass.  
Earle, Parker.....Roswell, N. M.  
Egbert, Knott C.....Siletz, Ore.  
Ellwanger, George.....Rochester, N. Y.  
Eshleman, John K.....Downingtown, Pa.  
Evans, Paul.....Mountain Grove, Mo.  
    (For Missouri Fruit Experiment Station.)  
Falconer Wm.....Pittsburg, Pa.  
    (Superintendent of Parks)  
Faxon, M. B.....13 Rhode Island Ave., Newport, R. I.  
Field, E. T.....Middletown, N. J.  
Fisher, R. W.....Bozeman, Montana.  
    (For Montana Experiment Station.)  
Gammon C. W.....Walnut Grove, Cal.  
Garcia, Fabian.....Mesilla Park, N. M.  
    (For New Mexico College of Agriculture and  
    Mechanical Arts.)  
Garfield, Chas. W.....Grand Rapids, Mich.  
Gay, Leslie F.....Monrovia, Cal.  
Gerrish, O. K.....Lakeville, Mass.  
Gold, T. S.....West Cornwall, Conn.  
Goodman, L. A.....4000 Warwick Blvd., Kansas City, Mo.  
    (For Missouri State Horticultural Society.)  
Graves S. S.....Geneva, N. Y.  
Green, S. B.....St. Anthony Park, Minn.  
    (For University of Minnesota.)  
Green, W. J.....Wooster, O.  
    (For Agricultural Experiment Station.)  
Greening, Chas. E.....Monroe, Mich.  
Grosvenor, C. E.....48 Boylston St., Boston, Mass.  
Guy, T. W.....Sulphur Springs, Mo.  
Hadwen, O. B.....Worcester, Mass.  
Hancock, Caroline G.....Sacramento, Cal.  
    (For Free Library.)  
Hansen, N. E.....Brookings, S. Dakota.  
Harris, Geo. W.....Ithaca, N. Y.  
    (For Cornell University Library.)  
Harris, James A.....Panasoffkee, Fla.  
Harrison, Orlando.....Berlin, Md.  
Harroun, W. S.....Santa Fé, N. M.  
Hart, W. S.....Hawks Park, Fla.  
Hartvelt, A.....Rynsburgerweg 14, Leiden, Holland.  
Heikes, W. F.....Huntsville, Ala.

- Helmer, J. W. .... 39 Aldine Square, Chicago, Ill.  
 Herff, B. von ..... 93 Nassau St., New York, N. Y.  
 Hexamer, F. M. .... 52 Lafayette Place, New York, N. Y.  
 Hoag, C. L. .... Lockport, N. Y.  
 Holmes, E. S. .... Grand Rapids, Mich.  
 Hubbard, T. S. .... Geneva, N. Y.  
 Hunnewell, Walter ..... 87 Milk St., Boston, Mass.  
 Hussman, Geo. C. .... Department of Agriculture, Washington, D. C.  
 Hutt, H. L. .... Guelph, Ont.  
 (For Ontario Agricultural College.)
- Ilgenfritz, Chas. A. .... Monroe, Mich.  
 Kendall, Edward ..... Cambridge, Mass.  
 Kendall, Geo. F. .... Cambridge, Mass.  
 Kidder, N. T. .... Milton, Mass.  
 Kirkpatrick, T. J. .... Springfield, O.  
 Lake, E. R. .... Corvallis, Ore.  
 Lauman G. N. .... Ithaca, N. Y.  
 Leighton, G. B. F. .... Alfred, Me.  
 Lindley, J. Van ..... Pomona, N. C.  
 Lovett, J. T. .... Little Silver, N. J.  
 Lyman, Henry L. .... Charlottesville, Va.  
 Lyons, Jas. M. .... 66 Hartford St., Roxbury, Mass.  
 Lysle, Addison ..... Fillmore, Cal.  
 McAfee, H. B. .... Parkville, Mo.  
 McDowell, R. H. .... Reno, Nev.  
 McKay, A. B. .... Agricultural College, Miss.  
 (For Mississippi Agricultural College.)
- McLaughlin, Henry ..... Bangor, Me.  
 Mackintosh, R. S. .... Auburn, Ala.  
 (For Alabama Polytechnic Institute.)
- Macoun, W. T. .... Ottawa, Can.  
 (For Central Experimental Farm.)
- Mann, Wm. R. .... Sharon, Mass.  
 Marshall, Geo. A. .... Arlington, Neb.  
 Maryland Agricultural Experiment Station. .... College Park, Md.  
 Masters, James H. .... Syracuse, Neb.  
 Maud, Chas. E. .... Riverside, Cal.  
 Meneray, F. W. .... Crescent, Ia.  
 Miller, F. R. .... Sugar Grove, Pa.  
 Miller, H. W. .... Paw Paw, W. Va.  
 Minott, C. W. .... Westminster, Mass.  
 Monroe, C. J. .... South Haven, Mich.  
 Morris, O. M. .... Stillwater, Oklahoma.  
 Mudd, Henry T. .... Room 408, Security Bldg., St. Louis, Mo.  
 Munson, D. O. .... Falls Church, Va.  
 Murray, R. D. .... Key West, Fla.  
 New York Agricultural Experiment Station. .... Geneva, N. Y.  
 Noble, Samuel W. .... Jenkintown, Pa.  
 Orton, Samuel W. .... Binghamton, N. Y.  
 Pearson, John M. .... Godfrey, Ill.  
 Periam, Jonathan. .... 1044 Pratt Ave., Rogers Park, Chicago, Ill.

Phelps, Lyman .....	Sanford, Fla.
Phoenix, F. K.....	Delevan, Wis.
Popenoe, E. A.....	Manhattan, Kas.
(For Kansas Agricultural College.)	
Pullen, Alexander.....	Milford, Del.
Purington, E. F.....	West Farmington, Me.
Quaintance, A. L.....	Paris, Texas.
Quinn, P. T.....	Newark, N. J.
Ream, J. A.....	Phoenix, Ariz.
Richardson, Chas. E.....	Horticultural Hall, Boston, Mass.
Riehl, E. A.....	Alton, Ill.
Roeding, Geo. C.....	Fresno, Cal.
Rumph, Samuel H.....	Marshallville, Ga.
Russell, Gurdon W.....	Hartford, Conn.
Rust, David.....	Horticultural Hall, Philadelphia, Pa.
Sadler, O. W.....	Pittsburg, Pa.
Sampson, F. G.....	Boardman, Fla.
Sandsten, E. P.....	Madison, Wis.
(For University of Wisconsin.)	
Sapporo Agricultural College.....	Sapporo, Hokkaido, Japan.
Selover, Edward C.....	Auburn, N. Y.
Shaw, C. C.....	Milford, N. H.
Shepard, C. U.....	Summerville, S. C.
Smith, Erwin F.....	1457 Stoughton St., Washington, D. C.
Smith, Geo. W.....	Hartford, Conn.
Smith, W.....	Geneva, N. Y.
Smith, Wm. Elliott.....	Alton, Ill.
Smith, Wing R.....	Syracuse, N. Y.
Stark, Clarence M.....	Louisiana, Mo.
Stark, Wm. Henry.....	Louisiana, Mo.
Starr, Robert W.....	Wolfville, N. S.
Stewart, Henry L.....	Middle Haddam, Conn.
Streator, Geo. J.....	Rosedale, Seaside Ave., Santa Cruz, Cal.
Strong, Wm. C.....	Waban, Mass.
Swineford, Howard.....	Richmond, Va.
Swingle, W. T.....	Department of Agriculture, Washington, D. C.
Taber, G. L.....	Glen St. Mary, Fla.
Taft, Edward P.....	Providence, R. I.
Taylor, F. W.....	St. Louis, Mo.
Taylor, Thomas.....	238 Mass. Ave., N. E., Washington, D. C.
Taylor, Wm. A.....	55 Q St., N. E., Washington, D. C.
Temple, John T.....	Davenport, Ia.
Templin, M. B.....	Calla, O.
Texas Agricultural College.....	College Station, Texas.
Thomas, Geo. B.....	West Chester, Pa.
Tinsley, Peter.....	Bethlehem, Pa.
Townsend, B. C.....	Bay Ridge, N. Y.
Trelease, Wm.....	Botanic Garden, St. Louis, Mo.
Trowbridge, Geo. W.....	Glendale, O.
Uber, Carlton A.....	Glencarly, Va.
Underwood, J. M.....	Lake City, Minn.

- Utley, H. W.....Detroit, Mich.  
 (For Public Library.)
- Van Deman, H. E.....Parksley, Va.
- Van Gelder, Jacob.....Saugerties, N. Y.
- Walker, Ernest.....Fayetteville, Ark.  
 (For Arkansas Agricultural Experiment Station.)
- Ward, C. W.....Queens, N. Y.
- Warder, R. H.....Lincoln Park, Chicago, Ill.
- Ware, Benj. P.....Clifton, Mass.
- Warren, J. R.....Cairn-Warren, Harcourt, Victoria, Australia.
- Washington Agricultural College.....Pullman, Wash.
- Waterer, Hosea.....Philadelphia, Pa.
- Watrous, C. L.....Des Moines, Ia.
- Watrous, Philip.....Des Moines, Ia.  
 (For Horticultural Library, Capitol Bldg.)
- Watson, B. M.....Jamaica Plain, Mass.
- Weber, Frank A.....Nursery Station, St. Louis, Mo.
- Wellborn, Jesse M.....Conyers, Ga.
- Wellhouse, F.....Fairmount, Kan.
- Wester, P. J.....Miami, Fla.
- Whitehead, John B.....Norfolk, Va.
- Whitten, J. C.....Columbia, Mo.  
 (For University of Missouri.)
- Wickersham, Robert A.....Winchester, Va.
- Wilder, Edward B.....Dorchester, Mass.
- Williams, Henry T.....Colorado Springs, Colo.
- Williams, J. L.....R. F. D. 4, Kansas City, Kan.
- Wood, Wm. H. S.....Wm. Wood Co., New York, N. Y.
- Yeomans, Wm. H.....Columbia, Conn.

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BIENNIAL MEMBERS FOR 29TH SESSION, 1905-1906.

- Adams, T. Lee.....417 Walnut St., Kansas City, Mo.
- Aldrich, H. A.....Neoga, Ill.
- Allen, W. F.....Salisbury, Md.
- Anderson, J. R.....Department of Agriculture, Victoria, B. C.
- Atkinson, Wilmer.....1024 Race St., Philadelphia, Pa.
- Atwood, G. A.....Springfield, Mo.
- Aultfather H. H.....Minerva, O.
- Austin, C. F.....Santiago de las Vegas, Cuba.
- Auten, B. C.....Carthage, Mo.
- Bailey, L. H.....Ithaca, N. Y.
- Bailey, Robert E.....Fulton, Mo.
- Baird, C. A.....Baird, N. J.
- Baird, John H.....Fort Valley, Ga.
- Baker, E. D.....Forest Lawn, N. Y.
- Baker, W. D.....Quincy, N. H.
- Baldwin S. J.....Seneca, Kan.
- Barnes, Edwin W.....Middle Hope, N. Y.
- Barnhart, W. R.....Greensburg, Pa.
- Barron, Leonard.....133-137 E. 16th St., New York, N. Y.
- Bassett, C. E.....Fennville, Mich.

Bechtel, Theodore.....	Ocean Springs, Miss.
Bedford, S. A.....	Brandon, Manitoba.
Berckmans, L. A.....	Augusta, Ga.
Berckmans, P. J. A.....	Augusta, Ga.
Black, John, M.D.....	New Castle, Del.
Blacknell, I. J.....	Titusville, N. J.
Blair and Kaufman.....	Kansas City, Mo.
Blalock, N. G.....	Walla Walla, Wash.
Boggs, A. A.....	Cocoanut Grove, Fla.
Brackett, G. B.....	Department of Agriculture, Washington, D. C.
Brand, O. F.....	Faribault, Minn.
Brooks, Fred E.....	Morgantown, W. Va.
Brown Bros. Co.....	Brown's Nurseries, Welland Co., Can.
Brown, Thomas L.....	Black Hall, Conn.
Brusse, G.....	Decatur, Ark.
Buckman, Benj.....	Farmingdale, Ill.
Buist, H. B.....	Rock Hill, S. C.
Burbank, Luther.....	Santa Rosa, Cal.
Burdick, Marcus M.....	199 Linwood Ave. Providence, R. I.
Burke, Rev. A. E.....	Alberton, P. E. I., Can.
Burnette, F. H.....	Baton Rouge, La.
Burton, Joe A.....	Mitchell, Ind.
Butman, J. W.....	Winthrop, Me.
Butterfield, J. S.....	Lees Summit, Mo.
Butterfield, M.....	Farmington, Mo.
Butz, Geo. C.....	State College, Pa.
Card, F. W.....	Kingston, R. I.
Carpenter, Jesse A.....	Abbott Run, R. I.
Carroll, R. J.....	Red Bank, N. Y.
Carroll, Wm. C.....	Kansas City, Mo.
Case, Chas. L.....	343 W. 87th St., New York, N. Y.
Cellar, W. D.....	Pacific Beach, Cal.
Chambliss, Chas. E.....	Clemson College, S. C.
Chandler, Asa.....	Wyandotte, Mo.
Chandler, M. E.....	Argentine, Kan.
Charlton, John and Son.....	Rochester, N. Y.
Chase Bros. Co.....	Rochester, N. Y.
Chase, H. S.....	Huntsville, Ala.
Chase, R. G.....	Geneva, N. Y.
Cheever, A. W.....	Dedham, Mass.
Clark, V. A.....	Phoenix, Ariz.
Clohan, Alex.....	Martinsburg, W. Va.
Close, C. P.....	Newark, Del.
Coe, E. F.....	New Haven, Conn.
Cole, M. Oliver.....	Springfield, Mo.
Collins, Arthur J.....	Moorestown, N. J.
Conklin, R. R.....	Huntington, N. Y.
Corbett, L. C.....	Department of Agriculture, Washington, D. C.
Corrigan, Jos. F.....	St. Leo, Fla.
Coryell, R. J.....	Birmingham, Mich.
Craig, G. S.....	Independence, Mo.
Craig, Wm., Jr.....	Auburn, Me.

Cranefield, Frederic	Madison, Wis.
Crawford, M.	Cuyahoga Falls, O.
Creasy, Wm. T.	Catawissa, Pa.
Crow, M. J.	Louisiana, Mo.
Cummings, F. D.	Portland, Me.
Cummings, M. B.	Orono, Me.
Cummins, H. H.	Bernards, Oklahoma.
Damel, J. W.	Lincoln Institute, Jefferson City, Mo.
Davidson, C. M.	Huntington, W. Va.
Davis, Howard	Baltimore and Paca St., Baltimore, Md.
Dean, M. L.	Napoleon, Mich.
DeCou, Howard F.	Moorestown, N. J.
Dickens, Albert	Manhattan, Kan.
Dickie, James	Massies Mills, Va.
Diehl, E. P.	Olathe, Kan.
Division of Horticulture, N. C. Dep't Agriculture	Raleigh, N. C.
Dixon, F. W.	Holton, Kan.
Dunlap, H. M.	Savoy, Ill.
Dutcher, C. H.	Warrensburg, Mo.
Dye, Franklin	Trenton, N. J.
Eaton, Horace	31 Milk St., Boston, Mass.
Eiffe, C. C.	Payette, Idaho.
Elliott, I. Y.	Rushville, Mo.
Elliott, Wyman	815 E. 18th St., Minneapolis, Minn.
Elliott, W. H.	Brighton, Mass.
Emerick, David	Paris, Ill.
Emerson, J. B.	20 E. 30th St., New York, N. Y.
Emerson, R. A.	Lincoln, Neb.
Emerson, S. J.	Lunenburg, Mass.
Engle, E. B.	Waynesboro, Pa.
Erwin, Arthur T.	Ames, Ia.
Etter, Albert F.	Ettersburg, Cal.
Evans, J. C.	Harlem, Mo.
Fairchild, H. L.	Bridgeport, Conn.
Fairmount Nursery Co.	504 St. John St., Fairmount, Minn.
Farnsworth, W. W.	Waterville, O.
Fennell, James T.	Beverly, N. J.
Fletcher, S. W.	Agricultural College, Mich.
Flournoy, W. T.	Marionville, Mo.
Foster, Rev. Addison P.	New Paltz, N. Y.
Foster, Geo. J.	Normal, Ill.
Fraser, S.	Ithaca, N. Y.
Fruit Grower Co.	St. Joseph, Mo.
Fulton, S. H., Div. of Pomology, Dep't. Agriculture	Washington, D. C.
Gage, John P.	Vineland, N. J.
Gano, W. G.	Parkville, Mo.
Georgeson, C. C.	Department of Agriculture, Sitka, Alaska.
Gilbert, Orrin	Middletown, Conn.
Gilbert, Z. A.	Greene, Me.
Gill, Geo. W.	287 E. Broad St., Columbus, O.
Gill and Crary Fruit Co., Ltd.	South Haven, Mich.
Goldsborough, A. T.	Wesley Heights, Washington, D. C.



Gordon, Howard D.....	Hazardville, Conn.
Gould, H. P.....	Department of Agriculture, Washington, D. C.
Grant, A. K.....	Pendicton, B. C.
Graves, H. S.....	Gainesville, Fla.
Gray, W. H.....	Eddyville, Ia.
Green, Chas. A.....	Rochester, N. Y.
Green, E. C.....	College Station, Texas.
Greene, Wesley.....	Des Moines, Ia.
Griese, A. H.....	Lawrence, Kan.
Gulley, A. G.....	Storrs, Conn.
Haden, Mrs. Florence P.....	Cocoanut Grove, Fla.
Hale, Henry E.....	Princeton, N. J.
Hale, J. H.....	South Glastonbury, Conn.
Hale, J. O.....	Byfield, Mass.
Hale, Moseley.....	South Glastonbury, Conn.
Hale, Stancliffe.....	South Glastonbury, Conn.
Halladay, A. A.....	Bellows Falls, Vt.
Halsted, Byron D.....	New Brunswick, N. J.
Halsted, E. W.....	Santiago de las Vegas, Cuba.
Hamon, G. S.....	Easton, Mo.
Hannah, W. H.....	Bristol, Conn.
Harrison, J. G and Sons.....	Berlin, Md.
Harrison J. J.....	Painesville, O.
Harvey, John T.....	Pittsfield, N. H.
Henry J. P.....	Rumsey, Cal.
Hicks, D. C.....	North Clarendon, Vt.
Heister, Gabriel.....	Harrisburg, Pa.
Higgins, J. E.....	Experiment Station, Honolulu, Hawaii.
Hill, D.....	Dundee, Ill.
Hixon, Adin A.....	Worcester, Mass.

(For Worcester Horticultural Society.)

Hobart, Clarence.....	Waltham Grove, Clearwater Harbor, Fla.
Hobbs, C. M.....	Bridgeport, Ind.
Hodge, C. F.....	Clark University, Worcester, Mass.
Hoff, Nels P.....	Edmonds, Wash.
Holman, E. J.....	Leavenworth, Kan.
Holsinger, C. V.....	Rosedale, Kan.
Holsinger, Frank.....	Rosedale, Kan.
Holsinger, G. L.....	Rosedale, Kan.
Holsinger, G. W.....	Rosedale, Kan.
Homan, Geo. S.....	Easton, Mo.
Hood, W. T.....	Richmond, Va.
Hooker, C. G.....	Rochester, N. Y.
Hubbard, E. S.....	Federal Point, Fla.
Hubbard Co., T. S.....	Fredonia, N. Y.
Hume, H. Harold.....	Raleigh, N. C.
Hutt, Wm. N.....	College Park, Md.
Illinois University Library.....	Champaign, Ill.
Irish, H. C.....	Botanic Garden, St. Louis, Mo.
Irvin, W. A.....	Springfield, Mo.
Irwin, Wm. N.....	Department of Agriculture, Washington, D. C.
Jack, Norman E.....	Chateaugay Basin, P. Q.

Jackson County Nursery Co.....	Lees Summit, Mo.
Jennings, C. D.....	St. Joseph, Mich.
Jewell Nursery Co.....	Lake City, Minn.
Johnson, G. C.....	1204 9th St., Kansas City, Mo.
Johnson, J. B.....	Manassas, Va.
Johnson, J. C.....	Tollgate, W. Va.
Johnson, Sylvester.....	67 S. Audubon Road, Irvington, Ind.
Johnson, T. C.....	Morgantown, W. Va.
Johnson, W. B. K.....	Allentown, Pa.
Johnson, W. G.....	52 Lafayette Place, New York, N. Y.
(For Orange Judd Co.)	
Joosten Estate, C. H.....	85 Dey St., New York City.
Jordan, A. T.....	New Brunswick, N. J.
Josselyn, Geo. S.....	Fredonia, N. Y.
Judd, Thomas.....	St. George, Utah.
Judson, L. B.....	Moscow, Idaho.
Kemp, W. S.....	Brookline, Mass.
Killen, J. W.....	Felton, Del.
Kimball, F. A.....	National City, Cal.
Kinney, L. F.....	Kingston, R. I.
Kinney, T. L.....	South Hero, Vt.
Kirkpatrick, E. W.....	McKinney, Texas.
Knowlton, D. H.....	Farmington, Me.
Koethen, Edward L.....	268 Brockton Ave., Riverside, Cal.
Koiner, G. W.....	Richmond, Va.
Lagacé, Jules.....	Fraserville, Quebec, Can.
Lake, D. S.....	Shenandoah, Ia.
Lang, George.....	Indian Head, N. W. T.
Latham, A. W.....	Minneapolis, Minn.
Lazenby, W. R.....	Columbus, O.
Leeson, J. R.....	.95 S. St., Boston, Mass.
Lewers, Ross.....	Franktown, Nev.
Lindsey, W. T.....	Tryon, N. C.
Lippincott, J. F.....	Moorestown, N. J.
Little, E. E.....	Ames, Ia.
Loop, A. I.....	North East, Pa.
Loope, T. E., M.D.....	Eureka, Wis.
Lovelace, E. H.....	Argentine, Kan.
Lowmiller, Daniel.....	Parkville, Mo.
Lupton, S. L.....	Winchester, Va.
Luttiehan, H. von.....	Earleton, Fla.
Lyman, Chas. E.....	Middlefield, Conn.
McCarty, C. T.....	Ankona, Fla.
McDanell, John W.....	Warsaw, Ky.
McFarland, J. Horace.....	Harrisburg, Pa.
McNair, A. D.....	Southern Pines, N. C.
McNeill, A.....	Ottawa, Can.
Mann, Willis T.....	Barker, N. Y.
Marshall, S. H.....	Madison, Wis.
Massachusetts Agricultural College Library.....	Amherst, Mass.
Mathews, C. W.....	660 S Limestone St., Lexington, Ky.
Maxwell, Wm. S.....	Still Pond, Md.

Mayer, I. H., M.D.	Willow Street, Pa.
Maynard, S. T.	Northboro, Mass.
Meehan, S. Mendelson	Germantown, Pa.
Meres, Mrs. W. F.	Tarpon Springs, Fla.
Merriman, J. H.	Southington, Conn.
Merritt, M. L.	Ames, Ia.
Miles, H. C. C.	Milford, Conn.
Miller, E. L.	2112 Benton Blvd., Kansas City, Mo.
Miller, G. H. and Son	Rome, Ga.
Miller, G. R.	Romney, W. Va.
Miller, Wilhelm	"Country Life in America," New York, N. Y.
Molumphy, J. T.	Berlin, Conn.
Moon, Samuel C.	Morrisville, Pa.
Moore, R. A.	Kensington, Conn.
Moore, S. W.	Elwell, W. Va.
Munson, T. V.	Denison, Texas.
Munson, W. M.	Orono, Me.
Murray, N. F.	Oregon, Mo.
Myers, J. B.	Boisé, Idaho.
Myers, Wm. S.	16 John St., New York, N. Y.
Olcott, R. T.	16 State St., Rochester, N. Y.
Onderdonk, G.	Nursery, Texas.
Oregon Nursery Co.	Salem, Ore.
Painter, E. O.	Jacksonville, Fla.
Palmer, R. M.	Department of Agriculture, Victoria, B. C.
Patten, C. G.	Charles City, Ia.
Peek, J. Yates	398 Nostrand Ave., Brooklyn, N. Y.
Perkins, J. S.	Argentine, Kan.
Perkins, R. H.	Turner, Kan.
Pettit, A. H.	Grimsby, Ont.
Pfaender, Wm., Jr.	New Ulm, Minn.
Phillips, J. L.	Blacksburg, Va.
Platt, Norman S.	398 Whalley Ave., New Haven, Conn.
Polhemus, Rev. C. H.	Port Ewen, N. Y.
Pollard, E. M.	Nehawka, Neb.
Powell, Edwin C.	Springfield, Mass.
Powell, E. P.	Clinton, N. Y.
Powell, G. Harold	Department of Agriculture, Washington, D. C.
Powell, Geo. T.	Ghent, N. Y.
Price, H. L.	Blacksburg, Va.
Price, R. H.	Long's Shop, Va.
Ragan, W. H.	Department of Agriculture, Washington, D. C.
Rane, F. Wm.	Durham, N. H.
Raymond, John E.	Philo, Ill.
Reasoner, E. N.	Oneco, Fla.
Reasoner, J. R.	Urbana, Ill.
Reid, W. H.	Tennent, N. J.
Rich, W. P.	300 Mass. Ave., Boston, Mass.
Richter, W. A.	Whitefish Bay, Wis.
Ricketts, James H.	638 G. St., S. E., Washington, D. C.
Robinson, S. A., M.D.	Covesville, Va.
Roesch, Lewis	Fredonia, N. Y.

Rolfs, P. H.....	Lake City, Fla.
Ruddick, J. H.....	Bourbon, Mo.
Rutledge, Benj. H.....	43-47 Broad St., Charleston, S. C.
Sabsovich, H. L.....	Woodbine, N. J.
Sage, C. D.....	North Brookfield, Mass.
Sanborn, Miss Gulielma P.....	Augusta, Me.
Sears, F. C.....	Wolfville, N. S.
Secor, Eugene.....	Forest City, Ia.
Sedgwick, T. F., Cartavio Sugar Co., Ltd., Hda....	Cartavio (Trujillo), Peru.
Seiter, Fred.....	R. F. D. 3, Spokane, Wash.
Sheibley, S. B.....	Department of Justice, Washington, D. C.
Smith, A. M.....	St. Catharines, Ont.
Smith, Fred A.....	Ipswich, Mass.
Smith, J. Russell....	Wharton School, Univ. of Pa., Philadelphia, Pa.
Smith, Theodore J.....	Geneva, N. Y.
Snyder, Walter.....	226 Light St., Baltimore, Md.
Stanton, J. W.....	Richview, Ill.
Stark, Eugene W.....	Louisiana, Mo.
Stark, W. P.....	Louisiana, Mo.
Starnes, H. N.....	Experiment, Ga.
Starr, Arthur C.....	Starr's Point, N. S.
Steinman, Christian.....	Mapleton, Ia.
Stevens, Abel F.....	Wellesley, Mass.
Stewart, Guy L.....	Southern Ry., Atlanta, Ga.
Stewart, John W.....	Martinsburg, W. Va.
Stinson, J. T.....	Springfield, Mo.
St. John, A. W.....	Mena, Ark.
Storrs and Harrison Co.....	Painesville, O.
Sturgus, M. B.....	Department of Commerce and Labor, Washington, D. C.
Stuart, Wm.....	Burlington, Vt.
Taber, Walter F.....	Poughkeepsie, N. Y.
Taft, C. P.....	Orange, Cal.
Taft, L. R.....	Agricultural College, Mich.
Taylor, Edwin.....	Edwardsville, Kan.
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Thomson, F. H.....	Isle of Hope, Ga.
Thurlow, T. C.....	West Newbury, Mass.
Tippin, Geo. T.....	Nichols, Mo.
Townsend, Geo. S.....	Troy, Mo.
Troop, James.....	Lafayette, Ind.
Troyer, A. M.....	Calhoun, Ala.
True, John W.....	New Gloucester, Me.
Tune, R. C.....	Amoret, Mo.
Tutertien, H.....	Wageningen, Holland.
Udell, Foster.....	Brockport, N. Y.
Vanderveer, D. Augustus.....	Freehold, N. J.
Veame, F. Ivo.....	Macknade, Faversham, England.
Vincenheller, Wm. G.....	Fayetteville, Ark.
Walker, Ernest.....	Fayetteville, Ark.
Ward, John.....	Shobden, Hereford, Eng.
Ward, J. B.....	Lyons Farms, N. J.
Waugh, F. A.....	Amherst, Mass.

Webb, Wesley.....	Dover, Del.
Welch, E. S.....	Shenandoah, Ia.
Western New York Nursery Co.....	Rochester, N. Y.
Whately, Walter.....	Crozet, Va.
Wheeler, H. S.....	Argentine, Kan.
White, Frank B.....	Caxton Bldg., Chicago, Ill.
White, Herbert C.....	Dewitt, Ga.
White, N. B.....	Norwood, Mass.
White, W. H.....	251 Nasmith St., Lowell, Mass.
Whitney, C. A.....	Upton, Mass.
Whitney, O. F.....	Station A., Topeka, Kan.
Whyte, R. B.....	Ottawa, Can.
Wild, Arthur O.....	Sarcoxie, Mo.
Wilder, Garret P.....	Honolulu, Hawaii.
Williams, J. C.....	Montclair, N. J.
Willis, A.....	Ottawa, Kan.
Wilson, A. V.....	Muncie, Kan.
Wilson, T. C.....	Hannibal, Mo.
Winchell, L. A.....	Tollhouse, Cal.
Wood, Allen L.....	Rochester, N. Y.
Woods, Samuel B.....	Charlottesville, Va.
Wragg, M. J.....	Des Moines, Ia.
Young, B. M.....	Morgan City, La.

## TWENTY-YEAR MEMBERS.

New York State Library.....	Albany, N. Y.
Paddock, Wendell.....	Fort Collins, Col.
(For Colorado College.)	
Wild, Henry N.....	Sarcoxie, Mo



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# IN MEMORIAM

## REPORT OF THE MEMORIAL AND OBITUARY COMMITTEE

PRESENTED BY PROFESSOR W. H. RAGAN

In following a commendable custom it becomes our sad duty to report the accompanying names of members, and former members, who have been cut down by the relentless "Scythe of Time," in that harvest that has no ending: These are: S. S. Bucklin, J. L. Budd, Charles Butler, Thomas Frankland, R. W. Furnas, H. H. Goodell, B. S. Hoxie, Henry S. Hunnewell, Z. K. Jewett, C. H. Joosten, R. M. Kellogg, J. M. McCulloch, J. W. Manning, J. Sterling Morton, R. D. Murray, Wm. H. Perot, John Rock, George L. Shoup, J. Stayman, Wm. H. White, and J. A. Wright; also C. E. Grovesnor and F. L. Temple, who have either died or removed to parts unknown to us. Surely this is a rich harvest, and the great "Destroyer" should rest satisfied with his work. Some of our best blood is included in this unusually long list. To them we pay our tribute of tears.

S. S. BUCKLIN, late of Bristol, Rhode Island, died December the 24th, 1903, at the ripe age of ninety years.

PROFESSOR JOSEPH L. BUDD, of Ames, Iowa, was a shining light whose illuminating influences cast their beneficent rays beyond the confines of our country's borders. He made his mark high and fully realized his own laudable ambition. Circumstances and conditions favored his high aspirations to be a benefactor and enabled him to gather laurels from across the seas. His fame was justly world-wide.

CHARLES BUTLER, while living, resided at Haitsdale, New York.

THOMAS FRANKLAND, late of Stonewall, Manitoba (Canada), did his full share in the great work of adapting our domestic fruits to that rigorous climate.

GOVERNOR ROBERT W. FURNAS, of Nebraska, who for a time was conspicuous in the political world, was ever so as a horticulturist. Indeed it was his just recognition as a horticulturist that brought him to the attention of his fellow citizens as one worthy to be their chief magistrate. Next to Morton, whom he loved with such ardent admiration, he stood in the front ranks with the lamented Warder and Bryant and Douglas, as a champion of the forestry interests. When we of the timbered sections of our country were so lavishly, if not so prodigally wasting our great natural forest resources, he was earnestly admonishing us to stay the "woodman's axe," in its destructive career, and although we then little heeded his wholesome advice, we are now repenting for our folly.

PRES. H. H. GOODELL, of Massachusetts Agricultural College, contributed largely in the dissemination of horticultural knowledge among the young. Some of our best men have learned the "Art which does mend nature" from Pres. Goodell. For many years he was the very efficient president of the Massachusetts Agricultural College, at Amherst, one of the best and most noted schools of its

character in our land. He was an honor and a credit to our Society and its membership.

B. S. HOXIE, of Wisconsin, was for several years the able and painstaking secretary of their State Horticultural Society, and as such contributed no small part in placing it in the very front rank among sister institutions of a similar character, in the various States.

HENRY S. HUNNEWELL, of Wellsley, Massachusetts, was a worthy representative of a family whom this society must ever reverence and admire. The Hunnewell house was more than once the beautiful and hospitable resort of the society while holding its meetings in the city of Boston.

Z. K. JEWETT, late of Sparta, Wisconsin, was for many years well known to us through his zealous work as a nurseryman in building up the horticulture of the great Northwest.

C. H. JOOSTEN, a resident of the city of New York, thought enough of the work of this society to become a paying member, and thus to aid and encourage in its good work.

R. M. KELLOGG, of Three Rivers, Michigan, was probably our most thoroughly successful strawberry grower. He had not followed the occupation for many years, having been previously engaged in other callings, yet he went into the business with so much intelligent zeal and determination that he very soon outstripped many who had made it a life occupation. He practiced intensive culture to a degree rarely known, and he won merited distinction in that line. His example should be a valuable lesson to those who are to follow in his calling.

JACOB W. MANNING, of Reading, Massachusetts, was an early and faithful member of this society, and if we are not mistaken, at the time of his death, had attended more of its meetings than any person then living. He was a nephew of Robert Manning, Sr., late of Salem, Mass., and originator and proprietor of the "Pomological Gardens" of that place, so justly celebrated as the leading establishment of its kind during the first half of the last century. Jacob was to some extent the pupil of his uncle, and as such, could not have failed to imbibe a lifelong taste for horticulture in all its branches.

HON. J. STERLING MORTON, of Nebraska. Like his esteemed friend, Gov. Furnas, Mr. Morton reached a high degree of eminence in political life, but it is doubtful if he would have attained such distinction, had he followed, as a life occupation, his once chosen profession. Horticulture seems to have been his inheritance, and it was this, to which he naturally reverted after trying professional life, that gave him his national reputation, and ultimately brought him, almost in spite of himself, to an honored place in a President's cabinet. The forestry question had one of its foremost champions in Mr. Morton.

R. D. MURRAY, M. D., of Florida, was a scientist in the strictest sense, yet for years he found time and pleasure in keeping in touch with nature, through his membership in numerous horticultural organizations to which he belonged. He was a Surgeon in the United States Marine Hospital Corps, and a specialist in the treatment of yellow fever, which, if we are not mistaken, finally numbered him as one of its numerous victims. For years he was stationed on the malarious coast of our Southern States, where his death recently occurred at Key West, Florida. He was a life member of this society.

WM. H. PEROT, of Baltimore, Maryland, was eminently conspicuous in the entertainment of this society, while holding its meeting in the city of Baltimore, in September 1877. At that time he became a life member.



JOHN ROCK, of Niles, California, was long and favorably known, through his enterprise as a nursery man of merited distinction, on the Pacific Coast.

HON. GEORGE L. SHOUP, of Idaho, seems to have first come in touch with the horticulturists of this country while serving as commissioner of exhibits for his State (then a Territory) at the New Orleans Exposition in 1884-5. While thus engaged, he attended the meetings of the American Horticultural Society and became a member. Later he became a life member of this society, and still later he served the cause of horticulture in the Senate branch of the United States Congress, where, more than once he was the able champion of our cause.

DR. J. STAYMAN, of Leavenworth, Kansas, belonged to a very long and justly distinguished list of ex-physicians, who, sooner or later in life, had surrendered the practice of their professions, in order to take up horticulture. In this list may be enumerated Brinckle, Kirtland, Kemnicott, Cornett, Wylie, Swasey, Hull, Warder, Furnas, Howsley and many others. Dr. Stayman was well known and justly distinguished for his painstaking labors in originating and identifying varieties, especially of the apple. His long and extensive correspondence with Charles Downing, and his frequent exchanges of varieties with that distinguished author, is convincing proof, if such were needed, of Dr. Stayman's high rank as a pomologist.

W. H. WHITE, of Lowell, Massachusetts, died on November 12th, 1903. He became a biennial member of this society at its last meeting in Boston but a brief period before his death.

J. A. WRIGHT, of Ogden, Utah, a former member, and, having frequently served on its committees, is eminently worthy of this passing tribute.

C. E. GROVESNOR, late of No. 48, Boylston Street, Boston, Mass., long a life member of the society, has passed out of view, either by the hand of death or removal from his former residence, and the same is true of F. L. TEMPLE, late of Van Ness House, Burlington, Vermont. Information concerning either will be kindly received, and duly appreciated.

#### OUR TRIBUTE TO THE LIVING.

Having placed laurel wreaths on the graves of our worthy dead, let us now bestow a word of justly merited praise on a few of those of our living to whom we owe debts of gratitude. There are two, and perhaps only two persons now living, who participated in the organization of this society. Samuel B. Parsons,\* of Flushing, Long Island, and George Ellwanger, of Rochester, New York, witnessed the coming together of the "North American Pomological Convention," and the "American Pomological Congress," at Philadelphia, in September 1852, and their successful union in one—"The American Pomological Society." These were "Founders;" they assisted in putting in place the particles of concrete, that now constitute the solid foundation upon which our superstructure rests. But recently a nation, so to speake, bowed in reverence to a single survivor of one of its wars. Should we not all the more reverence the few survivors who laid the foundations of this structure of ours, whose every fiber teaches "Peace on Earth and good will to Men!" We say, all hail to Samuel B. Parsons and George Ellwanger, and may they abide with us for yet many years, as living links that bind us to the memories of the past.

W. C. Strong, of Massachusetts, was a delegate in attendance, at the second meeting of this society, in the autumn of 1854, and there is certainly no one now living who has been present at more of its subsequent meetings. He has

often filled with credit alike to the society and to himself prominent positions in its roster of officers. At Boston, in 1903, besides being vice president and sometimes presiding, he ably assisted in onerous tasks of providing for the comfort of members of the society while attending its meetings.

There are three other men still living who are scarcely less worthy of our reverence and high esteem:

William G. Waring, of Pennsylvania, in 1851 published his "Fruit Growers' Hand Book," an interesting little volume of one hundred and thirty-four pages. Thus it would appear he is our only living author of the earlier period of American publications of this class. For a time, in the early history of this society, he was an active member, and often attended its meetings.

F. K. Phoenix, of Wisconsin, has for, more than a half century been a most active and intelligent participant in the development of the horticulture of the great Northwest. In 1850 he took a prominent part in the formation of the "Northwestern Fruit Growers' Association" and during the most of its five years' period of useful existence he was its secretary.

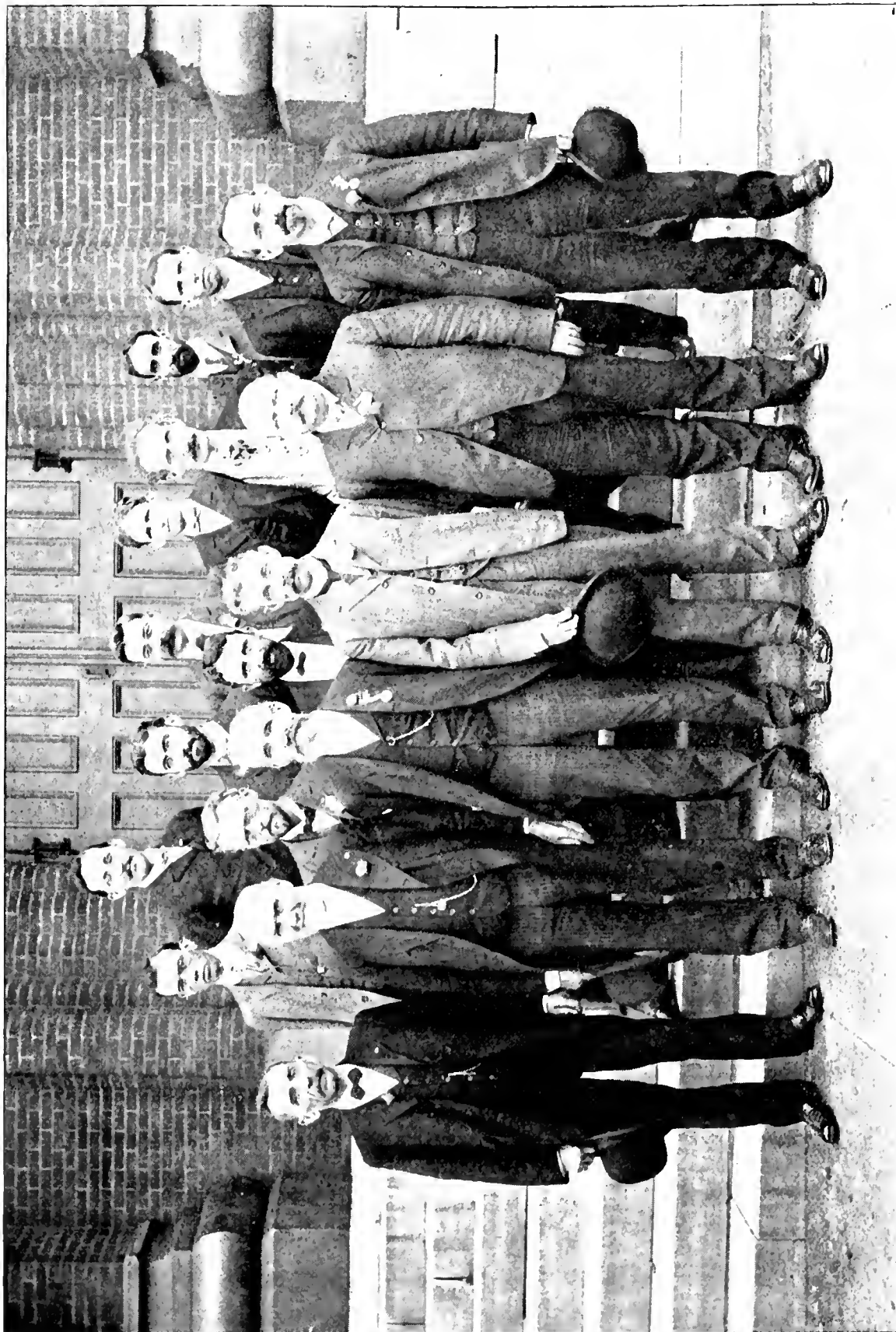
John C. Teas, of Missouri, but formerly of Indiana, was an early participant in the affairs of this society, and during a long and useful life, has stood in the front rank among our best and most worthy horticulturists. In a recent letter from him, one of those characteristic letters that he alone can write, he said he was never busier in his life and that he was now rapidly nearing his eightieth milestone in life's journey.

Mrs. Helen V. Austin, of Indiana. For some years past our secretary has been reporting the whereabouts of this lady, who enjoys the distinction of having been our first woman life member, as lost. Her last known residence was given as Winchester, Kentucky. Recent efforts have been rewarded by her rediscovery. She is now a resident of Centerville, Wayne county, Indiana, Mrs. Austin is well known to members of your committee, who, on account of her many good qualities, would gladly see her name restored to its proper place in our list of life members.

\*Since the above was written, Mr. Parsons has joined the throng who have passed over. He died in January, 1906.

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GROUP OF OFFICIAL HORTICULTURISTS

FRONT ROW, LEFT TO RIGHT: LAZENBY, RAGAN, BRACKET, BEACH, TAFT, GREEN (Minn.)

BACK ROW, LEFT TO RIGHT: ERWIN, MCINTOSH, EMERSON, IRISH, HUTT, LITTLE, CRAIG, GARCIA, MORRIS

# Proceedings of the American Pomological Society

At the Twenty-Ninth Biennial Session

Kansas City, Mo., Sept. 19-21, 1905

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PART I.

TUESDAY EVENING SESSION.

Kansas City, Mo., Sept. 19

The Twenty-Ninth Biennial Session of the American Pomological Society was called to order by Secretary Craig in the Banquet Rooms of the Coates House, Kansas City, Mo., at 8 p. m.

The Secretary: Ladies and Gentlemen, we are in the unfortunate position tonight of being without either President or Vice President. It then becomes us to elect a presiding officer, and I will ask someone to nominate a member to take charge of the meeting.

Mr. Dutcher: Mr. Chairman, in this extremity I would nominate Capt. C. L. Watrous, an ex-president of the Society, and chairman of the executive committee, to preside over this meeting.

Capt. Watrous was elected by acclamation.

The Chairman: I know that you will excuse my blushes for the honor you have conferred upon one who is an old veteran and upon the retired list. I believe that there is no way in which I may show my deep appreciation of the honor that you have conferred than by doing my best without any further remarks on my part to assist you in the orderly dispatch of the important work you have in hand.

It has been from the beginning of this Society a custom from which we have never departed to ask the blessing of God upon our work at the outset. In this we shall be led by Rev. Baity, of this city, who is present and is now requested to come forward.

INVOCATION.

Rev. G. P. Baity, Kansas City, Mo.

Almighty God, our loving Father in heaven, it is to thee we give our thanksgiving and praise tonight for all the mercy that we receive from thy bountiful hand. We give thanks to thee tonight for the gathering of this company from different parts of this great land which thou hast given us; and as these have come together to meet in this association we pray thy blessing upon them; we pray thy blessing upon the presiding officer and upon all the officers of this society, and upon all the committees in all their work, and we pray thee

that in this meeting they may have divine guidance in all their work. We pray that the lives of these who have come from afar to our city may be precious in thy sight, and that thou wilt not only bless them as they come here to engage in this work, but wilt thou also bless the loved ones that they have left behind, that no harm may befall them, that they shall all be preserved in body, mind and soul, so that when this meeting shall have ended, they shall go back again in peace to carry on the work to which thou hast called them. We give thanks to thee that thou hast made it possible for the production of all that we see before us, and that as we see this beautiful fruit spread before us, we may learn in our hearts the lesson of gentleness, goodness, faith and self-control, and grant that in all our lives we may be able to bear that precious fruit which shall be for the uplifting of our fellow men, and when we finish the work that is given to us in this life, may it be that in Paradise we may all assemble, and praise shall be thine—in that name which is above all other names. Amen.

The Chairman: Before we proceed further, we will ask Mr. Barnes of Kansas to come forward. He has something pleasant for us.

#### PRESENTATION OF GAVEL.

Mr. Barnes: On behalf of the Kansas State Horticultural Society I wish to present for use at this 29th meeting of the American Pomological Society this gavel. It is not only very handsome, but it is one of our most precious souvenirs. Marshall P. Wilder, whose picture is on the wall, the first president of the American Pomological Society, was not only a successful pear grower, but he was an enthusiast in that line, with his beautiful pear orchard near Boston. In the infancy of the Kansas State Horticultural Society, thirty to forty years ago, Mr. Wilder took great interest in that society, and he cut a limb from one of his best pear trees, and through our president, Mr. Johnson at that time, now deceased, presented this to the Kansas State Horticultural Society. For twenty-five or thirty years it has kept the Kansans in order at their annual sessions, and I thought it proper to bring it over and have it used to keep this society in order, which I do not think will be very hard, and therefore, Mr. President, I offer it to you for use during this session of the Society on behalf of our Society. (Applause).

The Chairman: I am sure we shall all be very glad to have this gavel. Marshall P. Wilder was not only the first president, but he was the only great president that the American Pomological Society has ever had. He presided over it for a quarter of a century, during the formative period of its existence, and left it a great and strong society. If we can continue it as he left it, we shall be worthy to use his gavel, or one of silver, or one of gold. I thank you, Mr. Barnes, on behalf of the Society.

We have with us tonight the Hon. J. H. Neff, mayor of Kansas City, who, on behalf of the city, will extend to this gathering the greetings of the city of Kansas City.

#### ADDRESS OF WELCOME.

By Hon. J. H. Neff.

Ladies and Gentlemen,—This society in its peregrinations about the United States I suppose is quite familiar with welcoming addresses from the leading executive officers of the various cities, but I doubt whether there has ever been one entrusted with this honor who has in a practical way ever possessed or exhibited more interest in fruit growing than the one

who now stands before you. I was raised on a farm in eastern Indiana; my father was a man who was very fond of horticulture, who never bought a piece of property without setting out fruit trees and fruit bearing plants, and I was reared in what you might call an atmosphere of fruit, and as a boy I had an egregious appetite for fruit. I could not wait until the fruit was ripe, but I attacked the green gooseberry and the green currant before they were much bigger than a fly-head, and the apple did not escape my wiles any time after it was bigger than a thimble, and thus I have been pursuing fruit all my life. There is not a day in the year, nor a meal in the year that I do not have a dish of fruit on my table. I believe that it has a great dietetic value outside of the extreme pleasure which I take in eating it. Many is the meal which I have made exclusively of fruit, so that you can see that I have had a lifetime intimacy, friendship and appreciation for fruit. I have eaten the most luscious fruits grown in the Orient, in China, and, going the other way, I have perhaps eaten the best oranges in the world at Joppa, on the east end of the Mediterranean; the sweet oranges of Cairo, that are almost too sweet to eat, and I never have failed to investigate with money and with palate the character and quality of the native fruits of the countries through which I have traveled.

The development of fruit growing in the United States has been watched by me with great interest throughout. There was a time when I was the editor of a produce market report, and I see one or two men here tonight who will remember seeing me among the barrels and boxes on Market Square. I got a prejudice against the Ben Davis apple at that time that I never lost. The Ben Davis, as I am reliably informed, was born and raised in eastern Indiana, not very far from the county where I was raised, and, as I have seen here, it has spread all over the western world, and the entire world, and I wonder whether the proper penalties will ever be inflicted on its inventor. He has created a monument that will never perish, and I do not think he needs another one!

As I say, in whatever part of the world I have been, in whatever parts of the United States I have been, I have studied the fruits and watched and investigated the horticultural possibilities of those regions with the greatest interest, and the fact that Missouri and Kansas have developed into great fruit growing States (I ought to mention, of course, Arkansas, Indian Territory and Oklahoma as being a part of this great fruit belt) has been a matter of great pleasure to me, and great pride as well. I read recently that the raisin or prune crop of California had nearly stopped exportations from Greece, Italy and Spain, those Mediterranean countries which practically were our sole source of supply. It is a matter of congratulation to the people of the United States that another resource is added to our vast variety of resources, and it seems a not impossible hope to believe that the United States is capable within her vast domains of growing practically everything that is needed by humanity for physical comfort and delectation. There is only one little section of the United States, New England, that I have not visited, and I never have quite gotten to Florida. In barren parts of New England they do not do much in fruit, compared with other regions, but from the Atlantic to the Pacific, from the northern lake to the gulf, I have seen practically all the United States, and it is my great pleasure to learn from year to year that our agricultural and horticultural or pomological possibilities are increasing from year to year. We have a man peculiarly constituted for the introduction of valuable foreign products in our Secretary of Agriculture, Mr. Wilson. His eye is, as I believe, scanning the horizon of the entire world to see what there is in any other part

of the world that might with profit be introduced into the agricultural regions of the United States.

Now, I have no doubt that you will at once perceive that this occasion is of more interest to me than you suspected when you gave me the honor of appearing before you to welcome you to Kansas City. The pleasure to the eye in witnessing these magnificent fruits here is only a part of the pleasure which I feel in coming here to see the leaders in this large and growing industry that is supplying not only the wants of the people of the United States, but going to a large extent into the markets of the world. Of course in my strictures on the Ben Davis I do not want you to think that I do not know that the Ben Davis sells better in London than any other apple a man can grow, and that when an apple grower cultivates the export trade he immediately starts a Ben Davis orchard and he gets better results than from the Jonathan and Belleflower and Grimes Golden. I say this as I do not want to appear ignorant, although I may have a prejudice against the Ben Davis.

But a little more in the line of welcoming you to Kansas City. We believe that we have a hospitable city here and we plan for hospitality on a considerable scale, as you will admit if you will go over to our convention hall before you go away. Kansas City is something like the second railroad center in the United States, which makes it a convenient place for societies of your kind to repair to for your deliberations. Some years ago, recognizing the fact that more and more of such associations as this would meet here for their annual deliberations, the public-spirited people of Kansas City in a purely altruistic way and without the hope of gain, erected that magnificent convention hall over there which will seat 15,000 to 16,000 people and accommodate, including standing-room, 20,000. We appointed a convention committee, which should keep its eye on the horizon and as associations like yours were deliberating about where their next annual convention should be held this committee would correspond with and invite such organizations to choose as the coming place for their convention this city. Our convention hall is used for very large gatherings; the democratic convention of 1900 met there. Of course an association like yours, where there is perhaps a delegate membership, or at least a limited membership, does not require so large a hall as that, but I want you to understand while you are here, that the spirit which led to the erection of Convention Hall is the same spirit of hospitality which greets you here tonight. It is the spirit of Kansas City to welcome, and cordially welcome, all such associations as this, and it is with pleasure, as the chief executive officer of the city, that I appear tonight to perform that pleasant function. The pleasure, as I have already said, is added to by the fact that you are engaged in an enterprise in which I have felt a lifetime interest, although personally I have never been identified actively with it. You are among the practical men, and I am associated constantly with practical men, being at the stockyards, associated with men, neighbors of yours, who, on adjoining farms raise the cattle and the horses and hogs and sheep and the mules of the United States, and there is not any difference, I suppose, between your spirit and theirs in the prosecution of your vocation. You are wideawake as they are in learning everything that is new and valuable to your profession or business. The perfection of pears, apples, grapes, or something of that kind is no more important to you than the thorough development of Hereford cattle, Cotswold sheep or Berkshire hogs is to them. I am a great deal more accustomed to meeting cattlemen in their deliberations,—in fact, this is the first horticultural society I ever attended—I have on the other hand been attending livestock conventions for twenty years or more, but I



understand thoroughly the spirit which brings you here, which is the further development and success of your line, and you will undoubtedly continue to do in the future as you have done in the past, something for the comfort and convenience and happiness of humanity, and as you gather here tonight in an atmosphere which I have ever reason to believe you will recognize as being full of cordiality, I do not think I can wish anything better in addition to this hospitality, than that your deliberations may proceed harmoniously, that all of you have learned something the last year which will be of mutual benefit to all, and that when you adjourn and repair to your several homes, you will feel that your meeting at Kansas City was not only a social success, but that it was a professional success, and that your conference has done something not only for yourselves, but for humanity. As you will proceed you may be sure that you have the best wishes of the people of Kansas City, including its executive officer. I thank you, Mr. President, for this pleasing opportunity to welcome you. (Applause).

The Chairman: Before listening to some words of response to the very cordial welcome we have had, I have to say that the invitation of Kansas City for this meeting to be held here was seconded by several horticultural societies, and on behalf of those societies we shall listen to some words by Senator Dunlap of Illinois.

#### THE ASSOCIATED SOCIETIES.

By Senator Dunlap.

Senator Dunlap: Mr. President, Ladies and Gentlemen: I feel in being asked to deliver this address of welcome to the American Pomological Society, that it is indeed an honor, and while I am sorry for you that the invitation did not come early enough so that I might deliver a carefully prepared address, still I appreciate the spirit in which this invitation came to me.

Many years ago it was my pleasure to become a member of the Illinois State Horticultural Society. In those days I looked with great reverence and admiration upon the older members of that Association. Among them were some of the leading horticulturists of this country. We have with us tonight one of those gentlemen in the person of Mr. Parker Earle, now of New Mexico. I want to say, in considering the attainments of Mr. Parker Earle in horticulture, that you must remember that he was raised in Illinois and got his horticultural education there. We have also among the older members of the Society at that time Mr. Edwin Richl of Alton, Mr. Patten of Iowa who are here tonight, and many other members. Some of you gentlemen have moved from Illinois and are now members of other state societies. In the horticultural world we do not know these state lines, we are not governed by the boundaries of the states in considering horticultural matters. There are great principles that extend throughout the whole length and breadth of this land, and I understand the main object of the American Pomological Society to be, to solve these great questions for the country at large, these general questions; the local questions we leave to the state societies.

In those early times that I refer to, such men as Parker Earle and Douglas and Whitney, great fruit men of Illinois were wont to discuss the matter of overproduction. Well, Nature sees to it that we do not have too much overproduction after all, and I think that in coming here this year, that no one particularly is suffering from overproduction of the fruit crop at home, so that we may go on and plant Ben Davis apples, just as we have the last 35 or 40 years, without overproduction. Incidentally I might say, I was somewhat

mortified to hear our worthy mayor speak in such opprobrious terms of the Ben Davis apple. He referred to it in words of contumely as if it were rather beneath the horticulturist to raise such things as Ben Davis apples; it was a great surprise to me, but it was explained a little further along in his speech, where he spoke of the great horticultural societies of the West, and he spoke of Kansas, and he spoke of Missouri and he went down to Arkansas and to Oklahoma and I think the Indian Territory, but he forgot the great horticultural state of the West, the state of Illinois, where three times a day I have upon my table the Ben Davis apple to eat. (Applause.) It simply shows that the Ben Davis apple of the great orchard state of Illinois has not yet found its way to Kansas City, and for that reason his remarks are excusable. Mr. Mayor, if you will come over into Illinois, we will teach you how to use the Ben Davis apple. The Ben Davis apple has been traduced from time immemorial almost. Now our Michigan friends, some of them are here tonight, they speak about the qualities of the Ben Davis apple with contempt. The fact is they cannot raise a good Ben Davis apple in Michigan. Our New York friends speak in the same way, but they are in the same predicament, and I think it is not so much prejudice against the Ben Davis apple as it is jealousy after all. In the markets of the world in the last few years the Ben Davis apple has gone side by side with the Baldwin and in almost all cases brought a higher price. Merit will rise, you cannot keep it down, and so it is with the Ben Davis apple. There may be other varieties that are better, but the Ben Davis apple, like all apples, and like the whiskey in Kentucky, is all good, though there may be a little difference in the quality.

But we are here tonight to welcome the members of the American Pomological Society, and we do it with sincere pleasure in behalf of these horticultural societies whom your chairman has mentioned. In this great Mississippi Valley the hundreds of thousands of acres of apple orchards that have been planted within the last ten or fifteen years will, when Nature smiles upon us once more, as we are sure she will do, and give us a bountiful crop, open the eyes of the so-called orchard districts of the East in such a way that the Baldwin will hide its diminished head in shame when it stands by the side of the train loads of Ben Davis, and Jonathan and Grimes, and all the good apples of this western country. When the countries of Europe become familiar with the Mississippi Valley apples, then the eastern states will have to look to their laurels, and we are glad to welcome a Society that has in the past days had its headquarters in the great east. We look with great awe upon the horticulture of Boston and New York, where they have their horticultural buildings and their horticultural exhibits, and the chrysanthemum shows and all these fine things that we practical horticulturists of the west can only read about, and when we think of all those things, and then think that the American Pomological Society has come to this great west at last to find out what the horticulture of the west is, and what it can do for us, then we are pleased and will say that there is nothing that gratifies us more than to welcome you, and we sincerely hope that your sessions, Mr. President and members of your society, will not only do us good, but that it may do the horticultural world good by an interchange of ideas, such as I know that the learned gentlemen here, the members of wide experience that I see before me, are capable of giving this meeting and to those here in attendance. I thank you for this pleasure.

The Chairman: It gives me great pleasure to call upon the Honorable Parker Earle, whom most of you know, and whom to know is to honor, for a response to these kind words of welcome.

## RESPONSE.

By Mr. Parker Earle, New Mexico.

Mr. Earle: Mr. President and Mr. Mayor; Ladies and Gentlemen: I cannot recollect when I was so happy and yet so unhappy as I am here tonight. I am so glad to be here to meet these scores of old friends whose hands I have not clasped for many years, to find them the same happy, wholesome, noble men that they were when they were young—a little younger than now. I am happy in feeling that I have known a good many of them for thirty or forty years, but I am quite miserable when I think that I never yet learned how to make a good horticultural speech, and you, ladies and gentlemen, deserve that sort of talk tonight.

I have heard a great many good things, almost all sorts of good things, said about Kansas City. I have known it was the second greatest railroad center on the American continent, and was striving very hard and expecting soon to become the first; I have known it was a great commercial emporium, that it contained the largest packing houses, save for one little town not so far away, in this whole broad land, but I never knew that you had such a fine horticultural mayor, who has been such a valiant member of the Apple Consumers' League since his youngest boyhood. Now, I like that kind of man, and if I were making a welcoming speech I would like to welcome a hundred more who have been eating apples and growing strong and robust on that diet all their lives. There seems to be something very fitting in this old horticultural society, the oldest pomological association in the United States, that has been moulding the thought of the American people and directing its horticultural action now for these almost sixty years, that it should come here and meet in one of the youngest, in fact, the youngest great American city to hold its biennial convention. We come here as a great society, representing a very great and important interest, to a very young and aspiring and stalwart city, and we meet this cordial welcome which has been expressed in so eloquent a way, and we are very glad that we came.

The American Pomological Society has probably had a greater influence in forming the taste and character of the American people than any other similar organization. The older members here look back to the time when the pomology and the horticulture of North America was about one-hundredth part only of the present magnitude of that interest today. When I first began to grow strawberries and plant pears and peaches in southern Illinois at the very beginning of the Civil War, when two or three of us had begun to plant and had expanded up to two or three acres of ground, we became very apprehensive lest we were going to oversupply the Chicago market, but we managed to sell our little crops to a good advantage. Chicago is able to take care of them all, and we were encouraged and our neighbors were encouraged, and planted more and more, until within a very few years strawberries were going northward every day in the early summer in trainloads instead of in a few wagonloads. That circumstance illustrates the growth of horticulture, and the growth of pomology in America. The American people are consuming to-day fifty to one hundred times as much fruit as they did about forty-five or fifty years ago, and the adility of this appetite will continue to increase and grow greater and the orchard planting will continue to go on and grow greater until the food of mankind in America will partake largely of the horticultural,—and that will be a happy day of civilization, for the welfare of mankind.

Kansas City is happily located in a great many respects. It is the center of this vast grain and corn and stock producing portion of the United States. It is also more central than any other large city to the largest fruit producing sections of the United States. A radial line running out four or five hundred miles and sweeping around the whole circumference of the horizon will embrace many of the great orchards of the United States—and of the world—they are all central to Kansas City. You go out here in one direction and you will find an apple orchard of five hundred acres; another of a thousand acres; I do not know how many you have in Missouri as large as a thousand acres, I have read about a good many. You go over into Kansas, and you find one of two thousand acres and more; you go into Arkansas and the whole country is dotted with great apple orchards; you go up into Iowa and the land is made beautiful everywhere with apple and plum orchards—in fact this has become an immense, a colossal industry. Few of us ever reflect or figure out the magnitude of this great interest that this American Pomological Society represents here tonight. I think we fairly represent these gigantic interests of modern civilization and that there are no others that rank in importance with this in its relation to the welfare of society. For these reasons I am glad that we came here, and I am personally very glad to be here.

The deliberations of this Convention may not be long extended, we may not discuss many of the important questions that will come before us that are of a very practical nature, but the influence that we shall exert through the reports that will be made of our proceedings will go out to the farthest limits of this land, and I am glad that we come here in a true spirit of hopefulness, after a year of comparative disaster in regard to our horticultural crops, glad to feel that you are the same hopeful, buoyant, optimistic men you were when you and I were boys together forty years ago and that the young men who are here, taking the places of those venerable, great men that have passed beyond are full of the same fine, generous enthusiasm, that optimistic feeling for humanity that has animated from the beginning of horticultural organizations all the men that come together in such societies. I have known a great many people and a great many organizations, but I have never known men and women that have come together under any other name or form of compact that have shown such generous enthusiasm for the welfare of everybody about them as have the pomological people of this country. There are many things of practical importance to come before this meeting, and I will not further consume your time. With many thanks for the high honor you do me in asking me to stand here a few moments, I wish the Convention and the Honorable Mayor of Kansas City the greatest success in all their enterprises.

#### OPENING REMARKS.

Chairman C. L. Watrous.

The Chairman: In the temporary absence of the President, his address will be deferred. I know that the Convention, having called me to the chair on the spur of the moment, does not expect any extended remarks, which would be, I think out of place. There are a good many others of our honored members who will be with us here later during the meeting. I am glad that there are so many here and am glad to have listened to the kind remarks of our entertainers and to the words of response by Mr. Earle. One thing struck me in

Mr. Earle's remarks, and I think it is true beyond question, that nowhere else on earth will you find so extensive fruit growing operations as in these United States, and nowhere else in these United States or upon this continent, as in the region of which St. Joe or Kansas City may be considered the center. Those who have traveled in the great countries of Europe tell us that the orchards are small. During the past months it has been my privilege to travel somewhat at the other side of the earth, and I was astonished at the pocket-handkerchief size of the nurseries over there, and at the horticultural operations and at the evidence on every hand that the common people, the people who represent there all of us here, go practically without fruit. We here think of Japan as a land full of horticultural works of fruit and flowers; but their horticulture is on the tiniest scale imaginable, and as to the food of the working millions of Japan, so far as I could see they never taste fruit from the beginning of the year to the end, and scarcely from the beginning of their lives to the laying down thereof. We are exceedingly fortunate, and I believe beyond question that there has been no other one influence so great in the development of the pomological interests of this continent as this American Pomological Society.

The accounts that have come down to us from the first meetings show that the Society was devoted almost entirely to testing a great medley of fruits grown by the people,—seedlings, a dozen fruits under one name and one fruit under a dozen names,—and straightening matters out and producing some kind of order out of chaos, so that it soon came about that a man in one State wanting fruit from another State might order from a reliable nursery that fruit under a certain name. He knew what he wanted, and the man who received his order knew what he wished, and the two came together upon common ground. We know that in our pomological books, the names of our fruits of European origin, pears and plums for instance, may be followed by almost an eighth of a page of synonyms. It was very often that a fruit was known by one name in one valley and by another name in another, so that there was no possible basis upon which the horticulturists of the country might work, as we can, here in America, and I believe that the greater part of the credit is due to the American Pomological Society. The one man in that Society who did more than any other to bring order out of confusion was Patrick Barry of Rochester, New York, now gone to his reward. His son is usually with us, but is not here tonight. I wish he were here tonight that we might give honor to his father and so gladden his heart.

The American Pomological Society in this country is the supreme court of pomology in the same manner and with the same degree of honor and credit as is the Supreme Court of these United States the last arbiter in all matters of law. Its judgments have never been called in question, so far I know. I have never yet heard of the man who was bold enough to rise up and say that the judgment of the American Pomological Society had been bought with money or tainted with malice or envy or hope of reward. We might say of the American Pomological Society, in the words uttered by a reverend man standing at the bier of a noble lady in England who had just finished her life's work, "The memories of this lady shall always be fragrant memories, for the works of her hands were good, and not evil, all the days of her life."

This has not been a society to make money. Those who come to its meetings come at their own expense and risk, and work because they love it. Its funds are very limited. Its only source of income, except a little gift from its founder, Marshall P. Wilder, is the biennial membership. This biennial mem-

bership costs a couple of dollars and you get reports that are worth many times that amount. I hope that before our sessions are ended here, there will be a long list of new biennial members and if there are those here who are pomologists and interested in the work, they can become life members upon the payment of twenty dollars only and receive not alone the volumes of the future, but also the volumes of the past, which are of very great interest and are scarce and becoming more valuable from year to year. I am sorry that you are deprived of the able address that you would have heard if our President had been with us, and thank you for your indulgence.

The Secretary read the following telegrams and letters of regret:

#### LETTERS AND TELEGRAMS OF REGRET

Telegram:

Rochester, N. Y., Sept. 19, 1905.

Secy. American Pomological Society:

Regret that exceedingly important business delays me here. Remember me to all.

W. C. BARRY,  
Member of executive Com.

FROM PRESIDENT HALE.

Telegram:

South Glastonbury, Conn.

Secretary American Pomological Society:

Greatly regret that the harvesting of my immense peach crop absolutely prohibits my attendance at Kansas City convention. Best wishes for a successful meeting.

J. H. HALE,  
President.

Sept. 19, 1905.

Letter:

My Dear Sir:—

It is very late Saturday night and the week's work is not yet finished, but I feel that I must write you just a word.

The world has little use for a man who is frequently saying "I told you so," but possibly you and other members of the Pomological Society will remember my suggestions to the Society at the Boston meeting two years ago that a great National Society like ours should not elect a busy, working horticulturist as its President, but rather have for its head one who is not over-crowded with his own business and has leisure opportunities at all seasons of the year to devote to public service; for now here is the very first meeting after my election to the Presidency of the Society and my fruit interests are such that it is absolutely impossible for me to meet with the Society at this time. I saw how it was going to be in June and felt obliged to notify you that, should the Society hold a meeting this summer at any time from August 10th to October 1st, I did not see how it would be possible for me to attend, yet when the meeting was arranged for the 19th of Sept. I had some faint hopes that it would be possible for me to steal away from home at the last moment, but unfortunately our peach season here is ten days late and we are still in the rush, harvesting two to three thousand bushels daily and all my time and attention is taken up in the

marketing. I am tired and pretty nearly worn out, otherwise I should have tried to have presented to the Society a little address on the very important general subject of the marketing of American Fruits. Some time I trust I may have an opportunity to do so, but just at present am so busy *doing* the thing that I have no time to write about it. With many regrets and kindest personal regards to all old friends and all members of the American Pomological Society, I am

Yours very truly,

J. H. HALE.

September 16, 1905.

Secretary American Pomological Society,

My Dear Sir:

It is with keen regret that I find that it will be impossible to meet with you at Kansas City next Tuesday. Illness in the family most of the summer has necessitated radical change in our arrangements so that official duties which I had planned to complete earlier and which cannot be postponed demand my presence here throughout the week. Up to to-day I had expected to be present, but this now appears impossible.

Please present my congratulations to the Society members on the gratifying outlook for a most interesting and profitable session as outlined in the program which has just reached me.

Circumstances largely beyond my control have prevented active participation in the committee and other work of the Society during the past two years, but my interest in it and faith in its usefulness and importance are undiminished. Hereafter I hope to be of more use in whatever capacity work is needed.

I especially regret absence from the meeting for the reason that it was my thought to urge greater systematic activity in the *ad interim* variety examinations, which field it seems to me is peculiarly suited to the character of the Society and of great importance to our pomology at this stage of its development. That branch should be given special encouragement and attention it appears to me in the future work of the Society.

With kindest regards to President Hale and the rest of the "old guard," I remain,

Yours most sincerely,

WM. A. TAYLOR.

Washington, D. C., September 16, 1905.

Dear Prof. Craig:

You are very kind to send me a program of the Kansas meeting, with a renewed request that I should be present. It would be a great joy to me once more, and in all probability for the last earthly time, to greet the few remaining veterans who were accustomed to rally at the call of our Wilder, to which Massachusetts gave a hearty response.

We are still loyal and ever shall rejoice in the extension and influence of the Society. But relatively how changed is our position! Is it claiming too much to say that fifty years ago we in New England stood in the forefront in fruit culture? What collections of pears came from President Wilder and Hovey, and of other fruits from numerous other cultivators! Doubtless we indulged in a little pride that we took the lead. But we soon recognized that New York was fully abreast with us, and we had not long to wait before the flood-gates were opened and fruits came pouring in from every quarter. We re-

joice in this abounding fruitfulness. This is in large degree the legitimate work of the Pomological Society. And it is American for all parts of our favored land in which we take a united and generous pride. This National Society must continue to have a most potent influence in bringing into close fellowship all sections of our broad domain.

With your excellent program and in the control of your efficient officers surely you will have a most interesting and profitable session.

Please extend kindly greetings to any who may remember me.

Sincerely yours,

Waban, Mass., September 13, 1905.

WM. C. STRONG.

Dear Mr. Goodman:

I have been looking forward with a great deal of pleasurable anticipation to the Pomological meeting for months and had hoped to have the best time of the year there, meeting the men and getting acquainted.

I have a small boy very sick with typhoid (don't know where he could have gotten it), and yesterday and to-day I have been about sick in bed. I will not be able to get away to-day as I had planned and may not get there before the meeting will end.

I hope the meeting will be a fine one and wish I could be there to enjoy it along with the rest of you.

Very truly yours,

J. C. WHITTEN,

Pres. Mo. Hort. Socy.

Columbia, Mo., September 18, 1905.

Dear Mr. Secretary:

I thank you for the copy of the proceedings of the American Pomological Society of 1903.

I am very sorry I cannot attend the meeting at Kansas City, but traveling is rather risky just now, owing to the rigid quarantine which prevents passing through several cities.

Wishing the meeting all success and with best wishes, I am,

Yours very truly,

P. J. BERCKMANS,

EX-President.

Augusta, Ga., September 11, 1905.

Secy. American Pomological Society,  
Ithaca, N. Y.

My Dear Sir:

I have your letter of September 9th, enclosing the program for the meeting in Kansas City. It quickens my heart-beats to read over the list of names with which I am so familiar, and gives poignancy to my regret in not being able to join with you all in the discussions of the meeting. Let me assure you my good friends, that no matter of business would keep me from this meeting. I have been used all my lifetime to make sacrifices connected with my own financial affairs in the interests of things which appeal to my public spirit. But loyalty to my home is my first duty, and the responsibilities there are such that it is impossible for me to take such a long trip away from those who are dependent upon me.

We have some old-time loyal friends in Missouri, who will greet you with open arms. Twenty years ago they were here at Grand Rapids, and I have



very pleasant remembrances of them. You will have Professor Taft and Mr. Monroe, and our genial and aggressive secretary of the State Horticultural Society, Mr. Bassett, from our State, and I trust some others. They will not forget their responsibility, however, to Michigan, and you will find in them an index to the progressive horticultural element in our State.

With sincere regards and an earnest desire that you may have an enthusiastic and successful convention, I am,

Yours sincerely and cordially,

CHAS. W. GARFIELD,

Grand Rapids, Mich., September 12, 1905.

First Vice President.

The treasurer's report was read as follows:

REPORT OF THE TREASURER FOR 1905-6

Dr.

Sept. 7, 1903.	Cash on hand .....	801.76
Sept. 7, 1905.	Received 291 Biennial Memberships .....	582.00
Sept. 7, 1905.	Received 24 Life Memberships .....	480.00
Sept. 7, 1905.	Received Interest on Bonds .....	400.00
Sept. 7, 1905.	Received Sale of Proceedings .....	8.00
Total Receipts .....		\$2,271.76

Cr.

Sept. 12, 1903.	Expenses of Secretary's Office.....\$	42.80
Oct. 5, 1903.	Grace L. Cutler, Reporting Meeting .....	60.00
Oct. 5, 1903.	John Craig, Assistant Secretary, Expenses....	34.80
Oct. 5, 1903.	Andrus and Church, Printing .....	14.10
Oct. 24, 1903.	S. A. Beach, Printing and Postage .....	4.51
Oct. 26, 1903.	Robt. Smith Ptg. Co., Printing .....	4.50
Oct. 29, 1903.	John Craig, Express .....	2.25
Oct. 29, 1903.	W. A. Taylor, Printing and Postage .....	26.90
Nov. 1, 1903.	Norton Ptg. Co., Printing .....	5.00
Nov. 1, 1903.	John Craig, Postage .....	10.00
Nov. 28, 1903.	Peter L. Krider Co., Medals .....	73.78
Jan. 4, 1904.	Lawrence & VanBuren, Printing .....	6.50
Feb. 10, 1904.	The Austin Engr. Co., Halftones .....	36.14
Feb. 10, 1904.	So. Ptrs. Supply Co., Printing .....	2.00
Feb. 10, 1904.	Norton Ptg. Co., Printing .....	2.00
Feb. 10, 1904.	W. F. Humphrey, Printing Proceedings.....	450.97
Feb. 10, 1904.	Lawrence & VanBuren, Printing.....	3.00
Apr. 13, 1904.	John Craig, Postage and Sundries .....	55.16
Apr. 27, 1904.	Thos. G. Miller, Printing .....	6.50
Apr. 27, 1904.	L. R. Taft, Expenses as Treasurer.....	60.71
May 31, 1904.	W. F. Humphrey, Alterations in Proceedings..	26.25
May 31, 1904.	Andrus & Church, Postals and Printing.....	13.25
Sept. 10, 1904.	John Craig, Salary as Secretary one year.....	100.00
Jan. 6, 1905.	John Craig, Express and Postage .....	11.01
July 6, 1905.	West. Pass. Assoc., Vising Charges .....	11.00
Aug. 8, 1905.	Austin Engr. Co., Halftones .....	33.07

Aug. 8, 1905.	Andrus & Church, Printing .....	26.25	
Aug. 8, 1905.	John Craig, Postage .....	25.55	
Sept. 1, 1905.	John Craig, Salary as Secretary one year.....	100.00	
Sept. 1, 1905.	L. R. Taft, Expenses of Treasurer's Office....	9.70	
			<hr/>
	Amount Paid Out .....	\$1,257.70	
	Cash to Balance .....	1,014.06	
			<hr/>
		\$2,271.76	\$2,271.76
			<hr/>

## Summary of Expenses

Expenses of Secretary's Office .....	\$ 293.08
Expenses of Treasurer's Office .....	84.41
Printing Proceedings .....	606.43
Wilder Medals .....	73.78
Salary of Secretary .....	200.00
	<hr/>
Total .....	\$1,257.70

L. R. TAFT, Treasurer.

Agricultural College, Mich., September 8, 1905.

## REPORT OF AUDITING COMMITTEE

This is to certify that we have examined the books and vouchers of L. R. Taft, Treasurer American Pomological Society, and find his report to be correct in every particular, accompanied by statement from cashier, showing that funds to the amount of \$1,114.06 are now on deposit in City National Bank, Lansing, Michigan.

C. G. PATTEN,  
FABIAN GARCIA,  
ALBERT DICKENS.

Auditing Committee.

## CERTIFICATE OF CASHIER

This certifies that L. R. Taft, Treasurer, has the following funds deposited in this bank:

In Certificates of Deposit .....	\$ 955.00
In Open Account .....	159.06
	<hr/>
Total to his Credit, Sept. 9, 1905.....	\$1,114.06

F. J. HOPKINS,  
Assistant Secretary.

Lansing, Mich., September 9, 1905.

## REPORT OF SECRETARY, 1905-6

The secretary takes pleasure in reporting increased interest on the part of the horticultural public in the work and purposes of the American Pomological Society. This grand organization has a distinct and definite mission among fruit growers. It has weathered the vicissitudes of more than half a century and brought facts, inspiration and valuable suggestions to the growers of fruit and cultivators of those creations which minister to the æsthetic needs of life. Its mission is unfolded in each volume of its proceedings. Each has grown more valuable than its predecessor. This is particularly true of the last volume—the report of the Boston meeting—a convention memorable in many respects. I have no hesitation in saying that nowhere else in one volume of this nature can an equal amount of valuable information be found. In this volume the Society well illustrates its true function, viz., the advancement of the science of pomology.

But the work of the Society is gradually taking on a broader phase. In dealing with such subjects as the grading and inspection of fruits; a code of nomenclature for pomologists—a uniform method of judging fruits; a system by which new fruits may be recognized and described between the sessions of the Society, it is taking up broad general questions which affect the science and practice of pomology in a large way and which should be brought before the State Societies and other horticultural organizations for ratification and support. In other words, the American Pomological Society is gradually becoming a unifying and correlating body in the congress of horticultural councils. Such an agent is needed to act as a central bureau for the collection and dissemination of pomological data and the technique of horticultural procedure.

We are glad to welcome the representatives of the National Federation of Horticultural Societies, and the secretary recommends that this organization be invited to affiliate with the American Pomological Society and to hold its meetings as at this convention, at the same time. The secretary is also of the opinion that all those horticultural organizations, other than trade associations, should be invited to meet with the American Pomological Society; if desirable, affiliate and become a section of it. The Apple Growers' Congress and Society for Horticultural Science are examples in point.

## MEMBERSHIP

Life members. The secretary recommends that life memberships hereafter taken out by institutions shall be for a period not exceeding thirty years, and that the back volumes of the Society be sold at one dollar each and not given with life memberships. In the case of individual life memberships, the secretary is also of the opinion that the Society should sell these back reports instead of donating them as formerly. In a few years these reports will have a fixed market value and will be difficult to secure.

## CORRESPONDENCE

The correspondence of the secretary's office is considerable and grows each year. 780 letters were received and 977 letters were sent out during the biennial period.

## SPECIAL REPORT

All life members and all biennial members not in arrears more than one biennial period have recently received a special publication issued by the Society. This pamphlet is compiled from reports submitted by various special committees

appointed during the World's Fair year. This was a co-operative effort on the part of Chief of Agriculture and Horticulture, F. W. Taylor of the World's Fair. For various reasons reports were not received from all the committees. The committees on CHERRIES submitted a valuable monograph which forms the body of the special report, while valuable information in less extended form is given by several others. The Society is indebted to these men for painstaking effort and excellent results, nor are the good services of Mr. Taylor to be overlooked.

#### MEMBERSHIP

The life membership should be greatly extended. We have 198 life members; we should have not less than 500. We have 397 biennial members; this should be increased to 1,000. Let each member draw in a new one before the next meeting. This Society has a past. It looks forward to a useful future. It is firmly established and its influence continues to spread. I look forward to the time when the Society has a permanent secretary, with permanent headquarters, who shall act for the organization in dealing with questions of interstate and even international import.

It was moved by Mr. Earle that the chairman appoint a committee of three to report upon the many useful suggestions contained in the report, which motion was duly seconded and carried.

#### REPORT OF COMMITTEE ON SECRETARY'S ADDRESS

To the President of the American Pomological Society:

Your committee, to whom was referred certain suggestions made in the report of the secretary, have carefully considered the recommendation and endorse the suggestion that the National Federation of Horticultural Societies, and all kindred horticultural associations, be invited to affiliate with, and to meet with and labor with, this Society in promoting the grand work in which we are all sympathetically engaged.

PARKER EARLE,  
L. R. TAFT,  
R. A. EMERSON.

#### COMMITTEES

The Chairman: I wish to announce the committee on credentials, and other important work.

Committee on Credentials: Col. J. C. Evans, Missouri; Wm. H. Barnes, Kansas; I. E. Ilgenfritz, Michigan.

Committee on Award of Wilder Medals: S. A. Beach, Iowa; G. B. Brackett, Washington; N. E. Hansen, South Dakota.

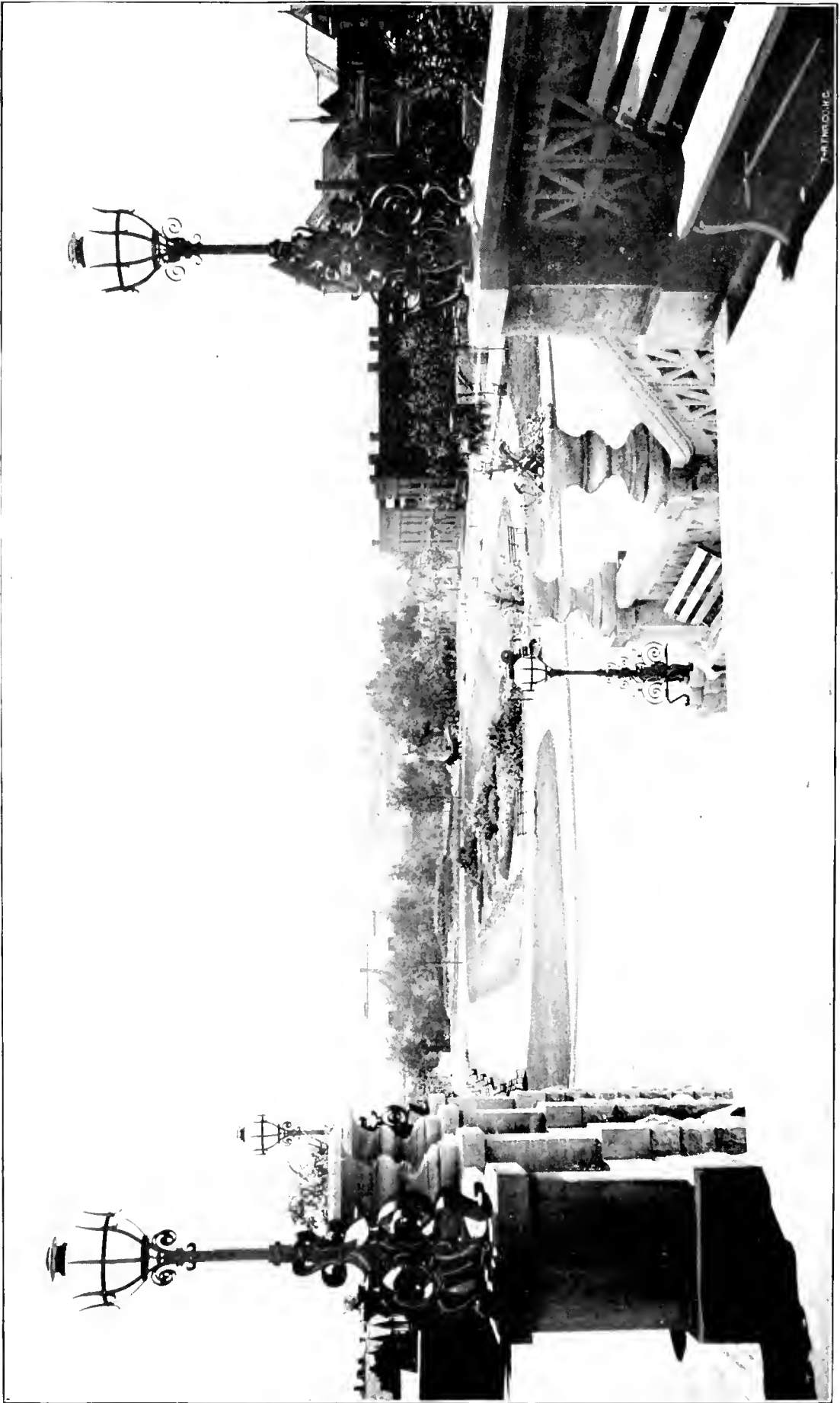
Final Resolutions: E. W. Kirkpatrick, Texas; S. B. Green, Minnesota; Geo. A. Marshall, Nebraska.

Auditing Committee: C. G. Patten, Fabian Garcia, Albert Dickens.

Committee on Secretary's Report: Parker Earle, New Mexico; R. A. Emerson, Nebraska; L. R. Taft, Michigan.

The Society then adjourned to the banquet hall, where they partook of an enjoyable dinner as guests of the Missouri Horticultural Society.





LOOKING SOUTH FROM THE TERRACE—TWELFTH STREET AND THE PASEO.

BANQUET TENDERED BY THE MISSOURI STATE HORTICULTURAL SOCIETY IN THE DINING-ROOMS OF THE COATES HOUSE, 9:30 P. M., SEPTEMBER 19, 1905, TO MEMBERS AND DELEGATES ATTENDING AMERICAN POMOLOGICAL SOCIETY

After partaking of a delightful dinner, splendidly served, a few toasts were offered under the direction of Professor C. H. Dutcher, who was introduced by Chairman Watrous, as follows:

In the absence of Professor Whitten, who was to have been our official toastmaster this evening, but is prevented by the illness of his son from being with us, we will have the services of Mr. C. H. Dutcher, whom it is my pleasure now to introduce to you as your toastmaster, and to warn you that you are at his mercy now.

Toastmaster Dutcher: Having so bountifully and substantially refreshed the inner man, we desire to contribute something to the intellectual, esthetic, and moral side of our nature, that is, we hope those who will be called upon to make these short five-minute impromptu speeches that they have been rehearsing to themselves while at the table, will contribute to our morals by telling the truth; in other words, I do not want any of them to imagine that they are simply returning from a fishing trip; that's all. The Southwestern portion of our country was noted mostly up to within a few years ago for its long-horned cattle, tarantulas, horned toads, Apaches, and other deadly things, but now behold her splendid fruit on our exhibition tables in the banquet rooms! How can it be? Mr. E. W. Kirkpatrick of Texas will endeavor to tell us.

Mr. Kirkpatrick, Texas; Professor Hansen, Dakota; Mr. Pollard, Nebraska; Professor Green, Minnesota; Mr. Ragan, Washington, and Professor Craig, New York, were called upon to speak as representatives of their respective States.

GIFT OF GAVEL

In responding to the toast "New York," Professor Craig closed by proposing one to Missouri and her State Horticultural Society—our hosts—and coupled with it the name of Mr. L. A. Goodman.

Mr. L. A. Goodman: The Missouri State Horticultural Society to-night has something to offer to the American Pomological Society. About one hundred years ago, a little lad in Jackson county, Mo., planted a small apple tree. That apple tree grew and throve till it reached ten and one-half feet in circumference. It was cut down in time and they had a section of it at the World's Fair, and out of the wood of this apple tree of ninety years of age we had made a gavel for this special occasion. On this gavel are twenty-four staves, linked together by friends of this Society who live at Brookfield, Mo.; they are glued together in the form of a barrel; this barrel has been made by the young men of Park College, Mo., a little college up there just opening its eyes to the world. About this gavel there are some bands of silver, which represent the solid substantial work of this Society for the last sixty years. On one end of it is inscribed, "Presented to the American Pomological Society by the Missouri State Horticultural Society." On the other side, the age of the tree, dimensions of the tree, and where it was grown are recorded, and to you, Mr. Toastmaster, I hand this and ask you to give it to the acting president of

this Society as a gavel to be kept by the American Pomological Society in remembrance of this meeting here in Kansas City. We are glad to-night to give to you the best thing that ever went out of any State. May it bring continued success to this noble national organization.

Received with applause; all standing.

### WEDNESDAY MORNING SESSION

Sept. 20, 1905, 9.30 A. M.

Meeting called to order by Chairman Watrous.

The Chairman: The first thing upon our program this morning is the report of the Committee on Credentials.

### DELEGATES

The following were officially announced as delegates:

Iowa State Horticultural Society, M. J. Wragg, Des Moines.  
 Michigan State Horticultural Society, Hon. C. J. Monroe, South Haven.  
 Secretary Chas. E. Bassett, Fennville.  
 Agricultural College, Professor L. R. Taft.  
 Charles Ilgenfritz, Monroe, Mich.  
 Ill. Horticultural Society, J. W. Stanton, Richview.  
 Kansas State Horticultural Society, Gerald Holsinger, Argentine, Kan.  
 Hon. Edwin Taylor, Edwardsville, Kan.  
 Mr. S. G. Marshall, Madison, Wis.  
 S. A. Beach, New York.  
 W. H. Barnes, Topeka.  
 Alabama Horticultural Society, W. F. Heikes, President.  
 R. S. Mackintosh, Auburn, Ala.  
 American Association of Nurserymen, A. Willis, Ottawa, Kan.  
 International Apple Shippers' Association, C. C. Ball, St. Louis.  
 Apple Growers' Congress, H. M. Dunlap, Illinois.

### A CHAPTER ON PLUMS

#### SOME OBSERVATIONS ON AMERICAN PLUMS IN KANSAS

Albert Dickens, Manhattan, Kan.

My admiration and fondness for *Prunus Americana* is of comparatively long standing. During the early years of the settlement of Central Kansas region known as the Arkansas Valley, the home-grown sauce ration consisted largely of sand plums and the flesh and rinds of various melons, with now and then a few elderberries and wild grapes. That part of Kansas, now second to none, began at the bottom pomologically, for at first the watermelon outranked the sand plum, because the watermelon could be made to produce the molasses necessary to preserve its rinds, while the sand plum required sorghum or sugar.

One year, I think it was in 1879, an untimely freeze caught the sand plum crop and it looked as though dried apples would be the only ally of the melon rind. But in early September, while helping drive some cattle over from the



Smoky Hill Valley, we found growing in the scanty timber along Cow Creek some ripe plums. They were not sand plums. They grew on small trees, not bushes, but a few feet high, and they were thicker skinned, less juicy, and grew in the same rich black soil that produced the big sod corn and sorghum. We took some home, of course, and mother said they were like the wild plums of Iowa and Minnesota. I learned later that botanists called them *Prunus Americana*, and whenever I see in varietal descriptions the good orthodox clauses, "flesh yellow, sweet, quality good to best," I remember Cow Creek plums.

The hardness of that wild plum which gave me good plum butter on the bread I carried to school in my dinner pail that winter, is one of its characteristics which recommends it to Kansas planters. It is less liable to be frost bitten than any other plum. It is a little later in blossoming and the wood has never been noted as "injured by cold."

The nurseries have not sold Kansas growers as many trees of American varieties as of other classes of plums. The Wildgoose and Miner were for some time the best sellers for the nursery. Some years later the Kansas growers wanted Japanese varieties. It took many growers a long time to learn that many varieties of Domesticas were not to be recorded as hardy and productive. We must also remember that Kansas has quite a variety of climate in her borders, and that varieties and species succeeding near Kansas City may not be best for the Arkansas Valley or the higher country of the Western part of the State.

The ability of this species to withstand hardships of various sorts is one of its most valuable characteristics, for it is, I think, long past the time when a grower need apologize for setting Americana varieties. They possess the qualities of valuable fruit. They grow, they bear, they sell, they are good to eat and to preserve, preserve in the generic term, including all the ways the good housewife has of "putting up" plums. Americana varieties in locations exposed to sun and hot wind suffered more in the drought of 1901 than did those of the Chicasaw, Wildgoose, and Wayland groups, but not so seriously as Domesticas, and not more than Japanese.

Americana varieties have been nearly equal to the other groups in coming into bearing, hardly as precocious as Japanese, and not so liable to overbear as Robinson and Pottawatamie of the Chicasaws or Golden Beauty of the Waylands.

At Manhattan ten-year-old trees of Weaver and De Soto have required considerable thinning in three seasons. Quaker, Hawkeye, Wolf, and Wyant trees of the same age have needed some thinning in two seasons. Weaver and Wyant, ten years set, have borne six crops, two of one-half bushel per tree, two slightly over one bushel, one of two bushels, and one of two bushels and a peck. Robinson, Moreman, and Pottawatomie of the same age, have excelled these in bearing.

Hawkeye, Quaker, Weaver, and Wolf, set in 1900, had slightly more than one-half bushel per tree in 1904, and a little more than one bushel per tree in 1905. Forest Garden bore a few fruits when three years set and nearly a bushel at four years.

Wyant has in a number of orchards proved worthy of a place. The young trees have almost invariably set and ripened a fair yield of fruit, which is of very fair size and good quality. It has rarely needed severe thinning. Bixby and Rollingstone of the twenty or more varieties observed, have been the only ones noted as shy bearers.

In good soil and favorable locations Wayland and Wildgoose have better records for growth and productiveness than have those of Americana blood, but in the northwest portion of the State the Americana has excelled the other groups named.

Without going into further details as to productiveness it may be said that we have no fault to find with the cultivated Americanas as to their fruiting habits, except that of overbearing in some varieties.

The form and growth of the trees of this species have been criticised by many growers. In a State like Kansas that boasts of no lack of air circulation the matter of breaking down when loaded with fruit is an important one, and the grower after a few losses looks more to the strength than to the beauty of the tree. In our judgment more depends upon the grower than the species, when the formation of plum trees is concerned, and the first years of the tree's life are the important ones, of course. Professor Popenoe's injunction to the orchardist to "take a sharp knife and all your brains" when going into the orchard should have the amendment "and a little grafting wax or paint" when the plum trees are the subject. The wounds seem to heal less quickly.

Older trees of Americana are usually harder to handle than are most other plum species, they seem to form new buds with more difficulty than Japanese, Chicasaw or the Wayland and Wildgoose, but, on the other hand, well-formed Americana trees have not made the heavy growth after coming into bearing that the other groups have. "They stay put" if well formed when young.

Every man who has inquiries to answer gets mighty tired of the sure-to-be-asked question, "Is it subject to curculio?" when a plum is mentioned, and he wants to answer, "Yes, and gouger and black knot and scab and leaf rust, slouchy growers, and shot hole fungus, and hail storms, and forest fires, and spring breezes, and poor marketing, but not more than others." The immune plum may be coming, it will probably arrive on the train just after the wormless apples. Plums must have care. As to brown rot, more depends on the weather at ripening time than on variety or species. Given a dry ripening season and there has been little difference.

A few years ago the Wildgoose, Wayland, and Japanese sorts had the luck to ripen in dry harvest weather, and Americans had warm, wet weather in late August and early September. Some of our growers said Americanas are more subject to rot, but when we get the wet weather in early July and dry in August and early September, the Americanas have had less loss than the other groups.

The man who is looking for the plum which can stand neglect, better plant post timber trees, for he can correct his errors more easily and will do his neighbors less injury.

## MARKETING NATIVE PLUMS IN THE NORTHWEST

By S. H. Marshall, Madison, Wisconsin

As you were told last night, we have been making horticulture in the Northwest. There are two classes who are doing this, the originator and the disseminator. Among the former are such men as Mr. Terry of Iowa, and the late Professor Goff of Wisconsin, Mr. Patten had made the American plum what it is to-day; it was left for some of us whose efforts ran in a different direction to grow and find a market for the fruit which they had created. These few thoughts will be confined to the marketing.

First of all we must presume that the plums you are to market are equal to Surprise, Hammer, Hawkeye, and Quaker at their best, and put up in quart boxes, or ten-pound grape baskets, and in lots of 25 to 100 baskets of the same variety. These should not be kept, but disposed of at once, as the plum does not last long.

There are numerous ways of advertising that should suggest themselves to the individual, as for instance arranging with the leading grocer of any of your neighboring towns that you may be visiting (at any season of the year) to send him a few sample baskets. Write to the bank or postmaster and get the name of such a firm and correspond with them.

Get out a leaflet giving receipts for cooking and preserving the plum, setting forth that it makes the very best jelly and spiced fruits, and place one in every basket you sell. Give these recipes, one or two at a time, to your local papers shortly before your harvest. These are a few ways to get an opening. After you have the opening and if you produce the right quality of fruit, the rest will take care of itself, and the market will grow faster than the orchard. At Madison this last summer Americana plums sold for from 25 to 45 cents per ten pound basket to the grocers. They brought 35 cents in Milwaukee and Duluth, 45 and 50 cents from commission houses at Wausau, Merrill, Eagle River and others towns in the northwest part of the State.

It would be a good thing if this Society would take up the matter of packages and recommend to the plum growers a uniform package of some description. This being done, I think you are assured a market for this the important native tree fruit of the Northwest.

#### DISCUSSION

The Chairman: We should now like to hear from the plum cranks generally. There are certain men who delight, I know, in calling themselves "plum cranks," because they know a great deal about plums. There is Prof. Green, who can tell you something about growing native plums in Minnesota.

Mr. Green. Mr. Elliott is the "plum crank" par excellence for the State of Minnesota; I want him to talk on plums. I would like to say, however, while I am on my feet, that the Surprise is the best sort in the way of native plums that we have ever had for the northern section of the country. When you come to talk about varieties, however, Mr. Elliott is the man to do it, because we look upon him as authority on plums in Minnesota.

The Chairman: Mr. Elliott will have the floor now.

#### IN WISCONSIN

Mr. Elliott: This subject of plums is something that has recently been taken up by me, only about six years ago. I do not claim to be authority on plums, still our friend Green there thinks that I know something about them. We find that there are a great many difficulties in raising plums in our section. We have at blooming time unpropitious weather, cold winds, frosts, etc. Then again, we have other things to contend with, insects and curculio, the "little Turk" is one of our greatest enemies. We have to make quite a study of varieties and we find there is a great variation in the different sections of our State in regard to varieties, about their being adaptable. As Professor Green said, we consider the Surprise to be the best at the present time. Our friend Patten has introduced the Rockford. Now, with us it does not do well at all, we hardly ever get a good crop.

We have the Wyant, and the Hawkeye, and the De Soto, and the New Ulm, and some years they will all do well, others they are deficient, and I might go on and name quite a number of varieties that are doing fairly well some seasons, but the great trouble with most of the plums is, they are troubled with leaf disease, they rust and rot when they are maturing, and for that reason we have only just come to the real study of Americana plums. We are growing a great many seedlings and hope eventually to produce varieties that we can depend upon, but at the present time we consider the Surprise better than anything else. We have recently, to induce our growers to make an effort, offered a prize for the best new plum specifying certain qualifications, we have hedged that around with such qualifications that we think will develop a pretty good plum. Our friend Mr. Loring offered last year \$100 for a plum that would fill the bill, but up to the present time we have not received anything that will come up to the standard. We count the Ocheeda, a plum that was originated in Minnesota, as one of the finest in quality that we have, and we have made that our standard. I do not know that there is anything I can say further that would interest you on plums. If there is any question I will answer if I can.

Mr. Patten: What are the requirements for the new plum?

Mr. Elliott: I cannot give you all the requirements off-hand, but if you will drop a card to the Secretary of our Horticultural Society, we will send you a circular giving all the requirements.

The Chairman: I think it will be interesting to hear from someone in the South. There is Mr. Kirkpatrick of Texas, who could tell us which plums are the very best in that region. We want to hear from different parts of this great nation of ours.

#### IN TEXAS

Mr. Kirkpatrick: Texas produces a great variety of plums. The Japanese varieties are nearly all adapted to Texas, the American plums do well there, they grow wild, we find them wild in the woods. Now we have introduced the Japanese varieties along with the Americanas, Chickasaws, and we have made many crosses. Some of them are very valuable, more valuable than the natives, more valuable than the Japanese. One of the best is called the Gonzales—that is the name of a place in Texas—and when grown under proper conditions, it is a very fine quality, very large, bright red color, ships well, and gives general satisfaction for general use. Burbank's plums do well there. One he calls the America is a very close approach to Gonzales, and is very popular in many places. The plum he introduced, the Burbank, is perfectly at home in Texas, they are planting it by the hundreds of acres. The Abundance is also a very valuable plum in Texas. Let me say, lest you forget it, that Texas is a great plum country, and a great apple country, and a great grape country, and a great country for all kinds of fruits, and it will some day be the greatest fruit producer in the world.

The Chairman: I am surprised that any man from Texas like Mr. Kirkpatrick should get up here and undertake to tell us that Texas is a great place, but then we have learned to be surprised in regard to the products of Texas.

#### NATIVE FORMS IN TEXAS

Mr. Munson: I have taken some interest in experimentation on plums. I have tried all the different species under cultivation and with reference to the

Americana, the Hawkeye, Forest Garden, such as those, I have planted probably a dozen varieties, including the leading ones in Iowa and in Minnesota, and my experience with them, almost as a whole, is that they winter-kill in Texas. That sounds very remarkable probably to Minnesota, but I will tell you how that occurs. The Americana plums come from a Northern climate and a very little heat will start the sap in them in February. We often have an open spell of weather, four or five days or a week, and in that time those trees will start a little sap, while our native Chickasaw plums remain perfectly dormant and if frozen at this time will not suffer. Those spells of weather invariably have killed more or less of the Americana forms until the experiment orchard planted with plums has nearly been depleted of those varieties. They are excellent in many ways; they bloom so much later than most of our varieties, the Chickasaw varieties, that if it were not for this being started by the early little heated spell, they would miss the later frost. There are a few of them that do reasonably well. The best one that I have tried is one I obtained from Theodore Young of Wichita Falls, Kan.; it is large, excellent, one of the very best I consider it to be, of any of that class. It is named Newton—do not confuse it with another plum, Newtown, there is a Newtown plum, but this is the Newton plum—and it is not the Newman plum either, the Newman is one of the Chickasaw plums. If it were not for this one defect, it would be a very valuable class. The nearest approach to that of any successful plum is in the Miner, which it seems is not a true Americana, I think it is regarded as a cross between Americana and some of the Chickasaws. It is very successful with us, almost perfect fruit, fruiting from year to year in abundance. It is a good market plum, not quite large enough.

The Secretary: Does it winter-kill?

Mr. Munson: No, sir, it does not winter-kill, it is an exception. This Kansas plum of which I speak, the Newton, winter-kills somewhat, but less than most others. I have tried the Wilder and the Downing; the Downing, however, is not pure, it is a cross between an Americana and Wildgoose; this succeeds very well, the crosses do well, but the pure Americana is a failure. Our most successful plums, as Mr. Kirkpatrick has remarked, are the Japanese, that is, a few of them, not all of them by any means. There are a number of varieties of that species that are so subject to the "gumming" disease and bloom so early that they are failures. Now I can name that list of these that have proved the most successful, with us, possibly. I shall name them in the order in which they ripen: The Red June, Abundance, Burbank, Normanda, large, yellow, golden plum, most excellent color, and the Chabot, that has several other synonyms, known as the Douglas and by several other names, is also reliable. The Satsuma plum is entirely too early; otherwise it is a remarkably attractive plum, exceedingly valuable, ladies like it to preserve. That is enough, probably, to be referred to; there are many others to be mentioned, but these will cover the season. Of the Chickasaw we have a few remaining in the list that are good in the South. There is an improved Wildgoose; it is a bell-shaped plum of the Wildgoose type, of good quality, very handsome, but the tree blooms early and the fruit is not as large and showy as the Japanese and some of the Japanese hybrids. Now I come to that class of the Burbank productions that I have tried. The Apple and Climax are so weakly, sickly in constitution that they are valueless with us, but the America I have fruited for a number of years. It is constantly very prolific, a large, beautiful, yellowish plum, yellow all over at first, but it grad-

ually blushes and becomes crimson all over when it is ripe; it is valuable for the market, sells well, quality not high, but still very good. It is a cross, I believe, between Abundance and Robinson. Then there is the Gold, that resembles it somewhat, but it has not the fine blush of the America and is subject to brown rot. The America often escapes the brown rot; it is very valuable with us. I will state with reference to the Chickasaw, I have seen them after they have set, with the little plums as large as small peas, frozen up entirely in ice, and yet thaw out and make a good crop, proving how hardy they are, whereas an American would perish invariably under such conditions. The European class has been tried extensively, but they are all failures on account of various troubles, especially the brown rot and curculio. Very few of them have given us any encouragement whatever.

The Chairman: When Professor Munson tells us that they have in Texas plums which may be frozen up solid over night and thaw out next morning and go on and make a crop, if we did not know him to be such an utterly truthful and reliable man, we should just think that he had been "fishing;" but we know that he never goes fishing. We also know that he is just as reliable as any man that ever came into this Society, and therefore we have to believe it. We would like to hear from Mr. Hutt, of College Park, Maryland, who will tell us about the plums that are most in favor along the Northeast Atlantic coast.

#### IN MARYLAND

Mr. Hutt: I have not very much to say on that subject, because I am a young Marylander, and I wish we had our plum crank here, Mr. Kerr, who has indeed a most wonderful collection on his place. I have just looked at the subject, you might say, from the outside; I have not had the experience and cannot give you the exact data that Professor Munson did in Texas. It was at Mr. Kerr's place where Professor Waugh did most of his experimenting. He has there about four hundred varieties, representing pretty fully the plum types. In Maryland the plum is not very largely grown, it does not seem to be a very general commercial crop. This last two or three weeks I have been visiting the Northern and Eastern markets and I was surprised to find that nearly all the plums in this country are grown on the Pacific Coast. Of course you recognize there the common varieties of the Japan plum almost entirely. This suggests that there is opportunity for plum growers in the East.

The Chairman: We will have a little more time to devote to this subject, and we will be glad to hear from anyone who has something to contribute to our knowledge of plum culture in America.

Mr. Dixon, Kansas: I was once a plum crank myself, and I thought I would plant a few plum trees and I planted about all the varieties I could read about in the catalogue, and I want to say that when it rains gold my dish will be upsidedown. I get a few plums to eat now and then, but generally the frost gets the bloom before we get a plum, and if any are left the curculio gets them. There is not a plum tree of the Japan type that will stand our climate in Kansas, I have tried every last one of them, I believe. I do not want anybody to get too enthusiastic and plant too many plum trees, but it is right to experiment.

Mr. Barnes, Kansas: Mr. Dixon was at the banquet last night and I do not think he is responsible. If he is, I will take those Kansas plum books off the table; a year or two ago he brought some fine samples to the meeting, and some of you may remember them.

Mr. Marshall, Wisconsin: I would like to make a few remarks in regard to the curculio that we hear so much about. I think that the people that are so troubled with the curculio do not spray nor cultivate. I think with a fair amount of cultivation and the rightful use of the Bordeaux mixture, or, I should say, arsenites, that curculio can be kept in check. I have never been troubled with it in my orchard at all and at the Experiment Station in Wisconsin, since they have been cultivating and spraying, they have not been troubled with it, and before that time they never got a perfect plum.

A Member: How do you get the curculio to take the arsenite?

Mr. Marshall: Well, I don't know myself whether he does take it, but with spraying and cultivation it has been my experience, wherever people spray and cultivate, that the curculio is not very bad.

Mr. Holsinger: If it had jaws and could eat, we will admit that it could be destroyed; does it eat?

Mr. Marshall: I don't know; I won't say that the curculio does take the arsenite, but I want to say that it has been my experience and observation that where people spray and cultivate they are not much troubled with the curculio.

Mr. Munson: What kind of arsenite do you use, and how much per so many gallons?

Mr. Marshall: I have been using of late years the disparene, about three pounds to a hundred gallons.

A Member: What influence could cultivation have in regard to curculio destruction?

Mr. Marshall: Well, it destroys the larvæ, and I think the curculio itself to a great extent, by turning them up and exposing them.

A Member: How late do you cultivate?

Mr. Marshall: Up to the middle of August.

Mr. Dart (Missouri): On the 21st day of August, 1901, that celebrated dry year, I was traveling over Kansas in a buggy; about eight miles east of Emporia we had dinner with a farmer, and he was a plum crank, he must have been; he had some fifteen to twenty varieties of plums and he had tried nearly all the Japanese varieties and the Wildgoose and the Miner, and they were all failures, and he had about forty little trees, just as full as they could hang, of Lombard, that is a European variety. They were beautiful plums, and he took me around and showed me his Wildgoose trees and they were scattering, but his Lombard trees were full, and I believe if I had the variety to choose, I would raise the Lombard in Kansas.

Mr. Irvine: The Lombard bore that dry year, but I dare say he has not had a crop of Lombard since 1901.

#### IN IOWA

Mr. Patten: I have had a little experience with the native plum, in fact it dates back quite a good many years, and I was reminded of how short a distance is required to make a difference of behavior in certain varieties of our native plums. Mr. Elliott and Mr. Green have stated that the Surprise is the best plum for Minnesota. I have been trying the Surprise for the last ten or twelve years. I have given them good cultivation, but I will say just now that I am about 125 miles south of where Mr. Elliott has made his experiments, and I have never had in that time but one reasonable crop of the Surprise plum. The Surprise, in such years as this year and last year, when we

have had excessive moisture, if it bears at all, just as it is coming to maturity it cracks and spoils on the tree. I have parallel with this row of Surprise plums a row of about fifteen rods long of the native seedlings, most all of the Rockford plum that Mr. Elliott tells you is quite a failure up in his portion of the country. This year is a very bad year for plums in our country and had it not been for that row of seedlings and other younger trees, seedlings of the native plum, we would not have had any plums to speak of, just merely a plum here and there, not a single plum on twenty-five trees of the Surprise, when a few of these other native trees bearing fine plums were loaded. On the curculio question I wish to say a word. Right in the same rows there are trees that are entirely free this year from the attacks of the curculio, while several other trees are badly injured by the curculio, so that I think by selection and by breeding as well, we may get ahead of the curculio. There is no question whatever in my mind that conditions vary in different sections of the country, in Minnesota, in Iowa, and southern Iowa, conditions are different from northern Iowa; and in southern Missouri and Texas and Kansas there are regions where the varieties differ that have been naturally developed there, and those varieties by selection may be improved, in my judgment and experience, very rapidly. I have come to a point in the development of the native plum where, so far as eating is concerned, I have no use any longer for plums represented by the Hawkeye, Stoddard and Wyant. I could not eat them now with any satisfaction whatever. I have some plums that were fruited this year for the first time, and just here I may say I am a nurseryman as well as a fruit grower, and you will have to take say some things that I say with allowance; but I will say that these plums—I have none to offer—are so much in advance of the varieties that have been on the market heretofore, that I now feel positive that we are going to make in northern Iowa certainly a most substantial advance in this question of the Americana plum.

Mr. Riehl: I want simply to emphasize the fact that I have grown a good many plums in an experimental way, and I want to say that anybody that desires to plant a plum, not to forget to plant the America. It is the best so far as growth, productiveness and beauty is concerned, of any plum that I have grown. It is not high in quality, as Professor Munson has told us, but it is a tree that will give you plums, at least that is our experience at Alton, and I want to say that because it confirms what others have said, that it will probably be met over a wide expanse of country.

#### IN NEW MEXICO

Mr. Earle: I would like to say a word about the European class of plums, which have been barely alluded to. Here on this table in the corner of the room, is an exhibit from Femville, Michigan, away 100 miles north of Chicago, on the other side of the lake, an exhibit to which I hope all members here will give attention if they have not done so, an exhibit of very remarkable excellence. Do not fail to see it! But why can those plums be grown in Michigan and not at Alton, or in Texas? This is a very important question. That class of plums is grown all over the Pacific coast, in all the semi-arid states, I believe very successfully, and in the territories; we grow them in New Mexico to the utmost perfection, and I suggest to you gentlemen who are in trouble about your plums, not getting any crops, or not getting plums good enough to eat, that you come to New Mexico and help us grow some and send back here to those that have none.



## IN COLORADO

Mr. Coburn: In listening to this discussion on plums, I could hardly resist the temptation to get up here and tell you something about the arid West, something about what we do in Colorado. Now I suppose perhaps you understand there are great climatic differences in different localities in Colorado. In the western part we have a better climate for raising any kind of fruit than they do on the Atlantic slope. On the Atlantic slope they raise principally Americana varieties of plums, or natives, on the western slopes they raise both kinds, and I want to say, on the western slope we have never planted any kind of plum, apple, peach or apricot, or anything else, without meeting with success. I will name the varieties I have in my own orchard; this is just a partial list. I have something like thirty varieties of plums growing in my orchard, all of which do remarkably well, and among the natives or Americanas are De Soto, Wildgoose, Miner, Rollingstone, and Wolfe. Among the Europeans we have the Bradshaw, Lombard, Gneii, and three or four kinds of Greengages. We have the large type of Greengage, as large as a peach, and it is a very rank grower and a thrifty plum, an immense bearer. I think I have nine trees of that kind, and I got 9500 pounds of plums, sent them to the cannery at \$18 a ton. In the western part of Colorado I do not have very much demand for plums except from the canneries. In the earlier years we used to have a good demand for them, but now they are so plenty that we do not use them.

Now then, there are other kinds that we have from Japan that grow to perfection, the Boton, the Burbank, the Ogon, and the Satsuma do remarkably well, and are immense bearers. We have also the Chinese Apricot plum (*Prunus simoni*), that is something new; I have not heard it mentioned here, and I will describe it so that you will understand what it is. It is a very upright grower, and when the fruit comes on and it ripens, and you lay it on a table or in a basket, nine people out of ten would say it was a fine basket of tomatoes, although the fruit be a little undersized; they are generally about two to three inches over, and they are flat like a tomato, and of a very high flavor. A basketfull of them will perfume a whole room, and they are sought after at very high prices for preserving. They are rather inclined to be tender in the bud.

In regard to the difference in fruit growing sections in the State of Colorado, in the mountains these are governed by the altitude and the exposure. The lowest altitude we have in the State of Colorado where we produce these things is about 4800 feet, and we grow them up to 7000 feet; but of course when we get very high, these foreign plums do not mature well, but we then use the natives, the American and Chickasaw. I live at 5500, but we mature everything there to perfection. We have no curculio, we have no disease, and the plums are simply immense bearers and perfect in growth, but unfortunately we have little sale for them. Now, here is the peach plum; we grow that; that is about the same size as a peach, and I would recommend all you people that can grow any of these foreign plums to try the peach plum. It ripens the last of July and it is a very fine plum for eating out of hand and is in great demand.

Member: What color is it?

Mr. Coburn: It is a dark red, or you might say almost purple, and a round plum.

Member: European variety?

Mr. Coburn: Yes, well, in fact it originated in California, that is where we first got our plants.

Member: Possibly Mr. Bryant can help you out in the naming of varieties.

Mr. Bryant: In regard to that one you say that grows so upright, that is *Prunus simoni*.

Mr. Coburn: Yes, *Prunus simoni*, Chinese apricot plum.

Member: I would like to ask why Colorado has not a display here.

Mr. Coburn: I want to explain that. We are pretty nearly 6000 feet elevation. I was at the Pueblo State Fair all last week, and there were nine-tenths of us present who did not gather a winter apple to show at that fair, simply because they are not matured. Take the reddest apple that we have, and there is scarcely a shade of red on them yet, and if I had an exhibit of my fine varieties here I would be ashamed to put them on here in competition with yours on account of the color; and a person must take that into consideration, but you have got to explain that to every man that looks at them, and for that reason I am glad that I have not got them here. They color up fine, but we do not commence to gather until about the tenth of next month (October).

Mr. Earle: I understood Mr. Coburn to say that while they could grow the European class of plums with great success in his region, there was very little sale for them.

Mr. Coburn: That is right.

Mr. Earle: I would like to know why there is very little sale.

Mr. Coburn: Well, the peaches and apricots and everything seem to come in competition with the plums, and in our local market especially there is very little demand for them, but if we sent them to Chicago, if we had them in carlots, in quantities, that we could ship them farther East, I presume we could get fair prices for them.

Mr. Earle: You ship peaches farther east and get good prices?

Mr. Coburn: Yes, we send our Elberta peaches to all the eastern markets, and I have even sent some of them to Liverpool and London and they went through in fine shape.

Mr. Earle: I think it is a fact, sir, that this class of plums, notably the Grand Duke, which is on the table there, and the Hungarian prune, that these two plums and some others have uniformly and always sold in Chicago and New York and Boston for very high prices, perhaps higher prices than your peaches, good as they are, do they not?

Mr. Coburn: They do, yes.

Mr. Earle: I see quotations up to 10 cents a pound, from 10 cents down to 7, and perhaps sometimes as low as 6, for this class of plums daily in the Chicago market. Now, I think it is strange that they do not grow these plums in every valley of Colorado, as well as in the other arid countries, when the market remains so high, and this has gone on for some years, as I personally know. Here is a fact of the utmost interest and of the utmost importance, financially, to men that can grow these plums, as we can in New Mexico just as well as you can in Colorado.

Mr. Coburn: Yes, I am sure of it, and I will tell you the reason why we do not raise them. In the first place we planted experimental orchards in order to find out what would be the best for us to raise. We found out that things not so perishable as plums or peaches are the best paying crop for us. So we take the winter apple and make more money.

Mr. Earle: May I ask how much winter apples bring per pound in the markets that you reach, and I know there are good ones?

Mr. Coburn: Our excellent winter apples, such as the Jonathan, Grimes Golden, Rome Beauty, and Wine Sap, bring from \$2.50 to \$4.00 a bushel box. We put everything up in bushel boxes.

Mr. Earle: That is the best package, and that is a grand price.

#### IOWA CONDITIONS

The Chairman: Now, this has been an extremely interesting subject, and I am very glad that it was started, and that we have had it, but we have used all the time. As we are leaving it, the chair begs pardon for emphasizing just one thing. Professor Munson said that with him the Gonzales plum was the best value, and that the Americana plums winter-kill. The gentleman from Minnesota said that the Surprise was the best of all with them, and Mr. Patten of Iowa says that it is not valuable with him. At Des Moines, which is another 100 miles farther south than Mr. Patten, I cannot get any plums from the Surprise. Now there is one lesson that one of the chief things that the fruit grower has to learn before he will put money in his purse is to get fruits that are adapted to his own locality. We may listen to the stories of the great value of fruits in another place, and it may be not very far, we must not go and plant depending on those reports, as true as they may be, from other places. We have tried in Iowa, European fruits from latitudes from 50 to 57. We have said that they winter-kill—they summer-kill. That is what kills the northern plums with Mr. Munson; he says they winter-kill, they summer-kill, and I believe summer-kill to the fruit grower is much more deadly than winter-kill. I would rather undertake to naturalize a fruit to the uppermost limit of its northern successful growth and trust to what Nature would do to it over winter, than to take a fruit from the far north and trust to what the burning sun will do to it in August. I think that is an extremely important point, and that we ought to take it home and keep it by us. I believe I have tried 300 varieties of plums, and now if I had them all swept away and could plant four or five, I would be willing to give a few hundred dollars.

#### INTRODUCTION OF DELEGATES

The Secretary reminds me of a very important and pleasant duty that has been overlooked. We have delegates from our sister allied societies, one from the American Association of Nurserymen, Mr. Willis of Ottawa, Kansas, we want to have a word of comfort and greeting from these delegates.

#### AMERICAN ASSOCIATION OF NURSERYMEN

Mr. Willis: Mr. President, Mr. Albertson asked me to serve as delegate of the American Nurserymen's Association at this meeting, and it was with great pleasure that I accepted such service. The fruit grower is dependent upon the nurseryman, because the nurseryman raises the trees to start with; he plants the seeds, the buds, the grafts, he produces them in the nursery, he supplies the fruit grower not alone with the fruit but with the ornamental trees and evergreens, and everything that grows out of the ground to make the home desirable. It is a pleasure to do this; sometimes it pays from a money

standpoint. We have been studying and working along this line for many years, and nurserymen feel that they have contributed a liberal share toward the upbuilding and the improvement of the fruit and ornamental trees of this country. We are engaged in this work; we propose to spend our years as we grow older in it, and if we gain experience, and if we gain knowledge, and if we gain benefit we invite you all to help us share it. You can see something of the handiwork of the nurseryman in this community. Look at the fruit trees; look at the great orchards of the South, look at all that has been done throughout the United States; that comes from the hand of the nurseryman, and then remember that the nurseryman has a great heart and welcomes you to the sharing of it all.

The nurseryman's business is a new business. We read about the nurseryman a few years ago as though he were a kind of pioneer, but as time has gone on he has been thoughtful, he has been earnest, he has been industrious, his business has grown, where you saw his trees a few years ago by the bundle and the handful, you see them to-day by the carload, and where a few called on him for small amounts, multitudes are calling on him for vast quantities at this time, and the business is going to grow, because the nurserymen are growing with it, and they are trying to keep up with it, and the people want their products, and we shall be glad at any time and all times to share with you. The nurseryman has no trade secrets, perhaps a few may have, but they are not nurserymen. The nurserymen have paid liberally, they have studied hard, they have learned many things, but they are generous and they divide it all; everything that we can do is at the service of the pomologist, of the fruit grower, of the public. We are proud of what we have accomplished, and we press forward to still further achievements.

The Chairman: We have a lot of other delegates here that we would be glad to hear from. We have a delegate from the American Apple Growers' Congress, Mr. H. M. Dunlap, of Illinois, we would be glad to hear from Mr. Dunlap.

#### AMERICAN APPLE GROWERS' CONGRESS

Mr. Dunlap. Mr. President and Members of the Society, it is a great pleasure to me to be here at this meeting. The American Pomological Society is doing a great work; it has its mission; it is the National Society of the State Horticultural Societies, as I take it. Its interest is in promoting the best fruits, and to find the latitude in which they will do the best, along with numerous other things that this Society undertakes and does. Every society almost has its specialty and this is its specialty.

A few years ago there was organized at St. Louis the American Apple Growers' Congress. It had for its mission the commercial side of horticulture or apple growing, not taking the broad name of horticulture. It restricts its mission to that of apples, and for almost any man one specialty is enough; and for a set of men to gather together and discuss that one topic in a two days' session is one of the most interesting meetings that it has been my good fortune ever to have attended. There are many questions that come before this congress that are live questions. This matter of railroad transportation and rate, refrigeration, etc., is one of the live questions that this Society has before it now.

I am glad to have this opportunity to address this convention with representatives from all the States of the Union almost, and invite you in the name

of our Society to meet with us in St. Louis the 8th, 9th, and 10th of November, and discuss these questions relating to the commercial side of apple growing, and I assure you that you will be well repaid for your trip, and that we will gain a great deal of help from you in having you with us. There is nothing succeeds so well as to have numbers behind it, and if the American Congress understands that the apple growers of the whole United States are interested in this question of rates and refrigeration of cars, why, they will pay more attention to it from a national association than they will from individual effort, or a desultory State organization, and I invite you, on behalf of the American Apple Growers' Congress, therefore, to meet with us in St. Louis on the 8th, 9th and 10 of November. I hope to see many of you there.

The Chairman: We have delegates appointed from the International Apple Shippers' Association; the names of these are C. C. Clements of Kansas City, C. C. Bell of St. Louis, and F. H. Richardson of Kansas City. Are any of those gentlemen in the room? We shall be glad to hear from them as we are passing. If none of these respond, we have some other delegates with us of of the Illinois Horticultural Society, New Hampshire, and Minnesota, some of them we have heard, from others we shall be glad to hear from time to time. We cordially greet you all and invite you to make yourselves at home and take part in these discussions; there is no time to listen to all at this time, because we have further work to do.

Mr. Bassett announced a meeting of the National Federation of Horticultural Societies to meet at 1 o'clock. Mr. Goodman also announced a trolley ride at 4 P. M.

The Chairman: The Secretary reminds me that if we would enjoy this ride this afternoon, we must do a little of the afternoon's work this forenoon. We shall take up now the important matter of Orchard Management, and go along with it a little way, and we have first "Cover Crops," and a paper from Professor Lloyd of Illinois, which will be read by the Secretary, to start the subject.

# Orchard Management

## I. COVER CROPPING OF ORCHARDS WITH REFERENCE TO ILLINOIS CONDITIONS.

JOHN W. LLOYD, CHAMPAIGN.

A large proportion of the commercial orchards of Illinois are located on the white clay soils of the Lower Illinoian glaciation and the unglaciated red clay soils of the Ozark Spurs and similar formations. Both these types of soil are deficient in nitrogen and humus.

The leading orchardists of Illinois believe in thorough cultivation during the early part of the season, followed by a cover crop of some sort, which shall remain undisturbed until the following spring. This practice is well suited to the orchards situated on fairly level lands, and these predominate in the great apple section of the State, including Marion, Clay, Wayne, Richland, and adjoining counties. Yet some of the orchards are on such steep hillsides that if the soil were kept in a fine state of tilth during even a part of the season, there would be serious danger of its washing. In such a location it is probable that alternate strips running across the slope should be cultivated and seeded to clover; each year the cultivated portion being that which was in clover the preceding year. Some growers prefer to keep a hillside orchard continuously in clover. If this is done, the clover is sometimes mowed and allowed to remain on the ground as a mulch, but it is probably better to disk the orchard enough to make a partial earth mulch, but not enough to kill out the clover. Some of the clover will ripen seed, and thus keep up a supply of young plants each year. Hairy vetch (*Vicia villosa*) may be employed in the same way, either grown on strips alternating with clean cultivated strips, or occupying the whole area, and not cultivated enough to be killed out. If used in strips, the strips cultivated one season may be seeded for the next season by simply dragging or raking the ripened vines and seed pods across from the strips seeded to vetch the preceding year. The width of the strips on steep hillsides should be the distance between two rows of trees, so that one half the area occupied by the roots of each tree is cultivated each year.

Except for steep hillsides where the prevention of washing is the prominent factor, the kind of cover crop to be used will depend upon the type and condition of the soil, the species of tree, the age and condition of the orchard, the peculiarities of the season, and the availability and price of seed.

Since so much of the orchard land of Illinois is deficient in nitrogen and humus, a leguminous crop that will survive the winter and furnish a large amount of herbage to be worked into the soil in the spring would seem to be desirable. Vetch and clover fulfil these requirements. If sown sufficiently early to become well established before winter, and form sufficient forliage to protect their crowns, they make a good growth during the wet weather of early spring, and can be plowed under, if clean cultivation is to be given, or chopped up with a disk if it is the intention to allow the plants to survive to reseed the land. Plowing would be preferable in a young orchard where some cultivated crop is to be grown between the trees; but disking is the favorite Illinois method of working a bearing orchard.

The black prairie soils of Central Illinois are rich in nitrogen and humus, and orchards on these lands may fare better if given a cover crop of oats or rye, rather than a legume. Oats will make a good cover before winter if sown in late August or early September, and can be readily disked into the soil in spring. Rye has an advantage over all other cover crops in that it will make sufficient cover for winter protection of the soil, even if sown very late. I have seen a good cover grown from seed sown October 13. On the other hand rye is objectionable on account of the extremely rank growth it makes in spring, and the difficulty of plowing it under if allowed to stand a few days too long. However, when properly handled, it makes an excellent cover growth for both young and bearing orchards on soils not deficient in nitrogen.

Leguminous cover crops should be used more sparingly in peach and pear, than in apple orchards, and may be used to better advantage in bearing than in young orchards, especially on soils not particularly deficient in nitrogen. Cow peas are frequently grown in bearing apple orchards in Southern Illinois and either "hogged-off" in the fall and the remnants disked into the soil in the spring, or the entire crop disked in. The main objections to cow peas as a cover crop are that in order to complete their growth before frost they must be sown earlier than cultivation should cease, and that after being killed by frost they shed their leaves and afford very little winter protection. The first objection may be at least partially overcome by continuing to harrow the orchard after the peas are sown; in fact the harrowing may sometimes be continued to advantage until the peas are six or eight inches high.

In seasons or localities with abundant rainfall, or for young orchards or older ones not bearing a crop, or orchards of extremely early maturing varieties, it is possible to use a cover crop requiring early sowing, but in dry seasons or localities, in orchards bearing full crops of the later varieties, cultivation must be continued until the arrival of the fall rains, and if a cover crop is grown it must make its main growth after these rains. If the rains come by the tenth of September, oats can be used and as mentioned above, rye can be relied upon to make a cover even if sown extremely late.

Theoretically, a cover crop growing in the orchard of a live, up-to-date Illinois fruit grower should consist of some civilized, respectable plant grown from seed carefully sown on a thoroughly prepared seed bed, and watched over with tender care. But practice sometimes differs from theory; and such is the case with cover crops in the majority of the commercial apple orchards of Illinois. It costs money to buy seed and sow a cover crop. The successful orchardists of Illinois are hard-headed business men. When they see a spontaneous product of the soil which thrives luxuriantly throughout the orchard regions of the State, competing for a place with the plants they sow for a cover crop, they cease sowing a cover crop and just let one grow. When the late summer and fall rains set in, and cultivation is ceased, the crab grass makes its growth. To be sure, it is not an ideal cover crop especially for soils deficient in nitrogen, but in seasons of light crops, when money is scarce, it makes a very good substitute for some of the more refined members of the cover crop family.

## II. CULTIVATION OF ORCHARDS IN SOUTHERN INDIANA.

JOE E. BURTON, ORLEANS.

Because I never before attended a meeting of this society, our honored Secretary has perhaps inferred that I was never away from home. Therefore

he has limited my remarks to Southern Indiana. He has forgotten that I went all the way, in the "kivered cars" to Texas. Well, in as much as many orchards in Southern Indiana receive no cultivation, save a green mulch two to six feet deep, I had as well work at home. However, there are some things that are very urgently needed by apple growers there, that are equally important to some apple growers elsewhere, and as it is possible that you are one of these, you had better all listen.

In the evolution of improved methods in Agriculture from the crude ways of our fathers, the teachers themselves had to learn. With no one to call them down, they frequently went to extremes. Because more culture than our fathers gave, proved beneficial, they jumped at the conclusion that the more culture the better. Also if intensive culture was best for the pumpkin, it was also best for the plum; if best for the plum, also for the apple. They failed to observe that yard grass does best only where the ground is tramped hardest. Careful observation will show us that some things grow well only by much culture; other things do well with little or no culture. Just how much culture the apple orchards require for best results has not yet been fully determined. It will be found somewhere between the clean culture taught by our Agricultural Colleges and the no culture practiced by many farmers. I have a small orchard, planted about twenty years ago in blue grass sod, and has been so kept ever since. The only cultivation has been a mulching of straw around the trees when we had the straw and time to apply it. This has been about once in two years. On account of the heavy yield of summer varieties, we have found it necessary to apply stable manure to them freely. This year, the fruit from two yellow Transparents sold for \$20.00, from one Trenton, \$11.00, two Beroni, \$26.00. Here are specimens of Jonathan and Pewaukee from this orchard. But I am not here as an advocate for a blue grass orchard. I am only trying to point out the fact that the high culture necessary for a good grain crop is not always necessary for a good apple crop. To be plain, I don't believe clean culture is best for the apple. The amount of culture for best results depends on the fertility of the soil. On very rich soil, they do best with no culture, save mowing the weeds or grass. Too much, and especially too late cultivation prevents the proper coloring of the fruit. Whatever detracts from color, detracts from quality. Our apple lands in Southern Indiana are a heavy clay, rich in potash and a goodly amount of phosphoric acid, both largely in unavailable form. Nitrogen is in very moderate quantities.

The land is hilly and clean culture means the washing away of the soil. I don't believe the All Wise One made this, the best of all apple soils, and then for best results, requires the operator to do something that will ruin the soil. True, we may plow the orchard in the Spring, cultivate during the Summer, and grow a cover crop for Winter that will prevent washing during Winter, but there is no protection during the Summer.

To make the potash and phosphoric acid available, it is necessary to incorporate humus with the soil. This is done more readily by keeping the vegetable matter on top, or near the surface, than by turning under. With a cover crop on the land, whatever it be, instead of plowing under, we grind up the surface soil by use of the rolling harrow. We use two harrows, one throws in, the other, out. One follows the other, thus always keeping the land level. We go both ways. If we have one inch of cover crop, and mix it with two inches of soil, we have a mulch of four to five inches. This will effectually prevent any washing and will remain a mulch till we grow another cover crop. It is, in fact, a kind of sponge that will drink up a two, or three inch rain, before there is any



surplus water to run off. This harrowing can be done as often as desired, or as the health of the land requires. Our orchard is fairly rich and we never harrow more than twice, and never later than June 15. For a cover crop, we grow crab grass, and think it ideal. It is cheap for seed, being already sown, makes a nice carpet to work on, retains moisture, never giving up its dew until afternoon. If the land was poor, we would grow some nitrogenous crop.

Now a word about the labor. The hired man loves to ride. This mode of culture pleases him and he keeps in a good humor. But put him to plowing in the orchard, and it is just the reverse. Is there any other work as disagreeable? He must lift and throw his plow twice every thirty-three feet, at the same time, he must keep the horses and single-tree off the trees. He is sure to bark some trees, then he will become angry and abuse the horses when they are not to blame. They will get mad, and in the excitement, skin numbers of trees. Then you must keep the children away, lest they hear something not in the Sunday School Lesson. The poor hired man! Will St. Peter charge these ugly words up against him? I rather think not, many of them, but will put a goodly number in the bill of the easily duped orchardist, but by far, the larger part will have to be settled for by the professor who taught that such culture was necessary.

That fine apples can be grown by my method is evidenced by my rewards at Paris and St. Louis; and this season's crop,—a silver medal at Paris, a gold medal at St. Louis.

The product of 110 Grimes this season sold for \$1700.00, or \$15.50 per tree. I don't claim these results are due to the method of cultivation alone, but it has much to do with it. It is certainly the easiest method of successful cultivation. Over in Indiana, I sometimes make speeches on the topic, "Apple growing made easy." Many people in Indiana, and especially in the northern part (I live in the southern part) believe everything I say about apple growing. They like the easy idea. But it is no use talking to you here in Missouri, you have to see, to be convinced. Well, here are apples from the orchard of the Burton Fruit Co., where I practice this mode of culture. See for yourselves.

#### DISCUSSION.

Mr. Dunlap: Is there any danger of fire?

Mr. Burton: Yes, I suppose there is danger in everything that is good.

Mr. Dunlap: Do you spray your trees?

Mr. Burton: Yes.

Mr. Dunlap: How old is that Grimes tree?

Mr. Burton: Eighteen years old.

Mr. Dunlap: Does it bear annually?

Mr. Burton: It gives a bearing crop every year; it never gave such a crop of Grimes as this, the tree was thoroughly loaded.

Member: To what do you attribute it?

Mr. Burton: Why, the Grimes bloomed abundantly; I do not know just what did it, but it bloomed and set abundantly and the fruit stayed on.

Member: Did they bear lightly last year?

Mr. Burton: No, sir, they had a little over half a crop last year. I might state this, that our orchard gives well-paying crops every year, and they do not set any fuller than our neighbors' crops, but we spray and they do not. At gathering time theirs have all fallen, but ours are enough to make a fair crop of large, beautiful apples.

Member: What do you spray with?

Mr. Burton: We spray with Bordeaux and Paris green.

Member: Liquid or dust?

Mr. Burton: With liquid. I have never known of any dust spraying in our part of the country.

Member: How late do you spray?

Mr. Burton: We spray twice; as quickly as we can spray from one side, and then the wind comes from the other way, after the blossom drops. We would spray more if we had time, but like most farmers, we are busy.

Member: You have twenty-four hours a day there, the same as we do?

Mr. Burton: Yes, but we have to work twenty-five to get clear around.

Mr. Dunlap: I take it from Mr. Burton's remarks that his orchard is in a hilly country?

Mr. Burton: Yes.

Mr. Dunlap: I will say that I have been in Pike County, Illinois, considerably during the last month; and have bought apples in an orchard over there. The apple orchard is about fifteen acres in extent. I have traveled considerably over Pike County in the last few weeks, and find the fruit there is more or less defective, as it is in many parts of Missouri and Illinois, but in this particular orchard that is up on the bluff, with ravines on each side of it, they have a splendid air drainage, and they certainly must have a good soil for producing apples, for the trees are loaded down, as Mr. Burton says they are in his orchard, the Grimes there are magnificent. Well, now, it takes more than one swallow to make a summer. There are certain conditions in certain places that will permit a man to neglect certain duties that on other soils and with other surrounding conditions he must perform if he is going to be successful. I do not think, as Mr. Burton says, that thorough cultivation would be the wrong thing in many places, but in his particular place he is giving it the right kind of cultivation. Now, my idea is that a man must understand the location of his apple orchard, and adapt his cultivation to those conditions that will make it the most successful, and when you say that I believe you have covered the subject. The thing is to find out what the needs are. This orchard where I bought the apples has not been given any more care than the ordinary careful fruit grower would give, but his trees are loaded down, and there is I know one gentleman there that has over 160 acres located within four or five miles who has practically nothing in his orchard. Now those are things that are hard sometimes to understand, but there is a protection in the form of a fringe of trees on the north and to the south of the orchard that probably saved it when the freezing came last spring.

Member: It was not cultivated with crab grass?

Mr. Dunlap: There is grass in the orchard, and there are some weeds there, and it is practically the cultivation that Mr. Burton gave his orchard, that is, it has not been cultivated since the first of June; I think it was disked once or twice up to that time, but this aftergrowth has been allowed to mature and they have had plenty of rain and it is a success. Now, it seems to me that the gist of Mr. Burton's remarks, is to adapt ourselves to our conditions and make the best of it.

Member: I would like to ask Mr. Burton what formula you use for your Bordeaux?

Mr. Burton: We use 4-4-50.

Member: What per cent. of Paris green?

Mr. Burton: Four ounces to fifty gallons of water.

Member: How many times do you spray?

Mr. Burton: We spray once before the bloom and twice afterwards, when we want to spray from both sides of the tree so as to reach it all, we spray as soon as the wind will blow again the other way.

Member: Do you find that four ounces of Paris green to fifty gallons of water control the moth?

Mr. Burton: Largely; we have some worms, but you may know they were not so very bad, or our apples would not have brought the price.

Member: Do you have the later brood of the codling moth?

Mr. Burton: Yes, we have the second brood; we never spray for it, but I want to state this, that there are not many of our apples that show the codling moth in the blossom and in the fall, and I would like to state here, that the way we spray has much to do with growing my apples. Prof. Craig does not endorse what I say, but if I get the results by my method of spraying, you will have to let me say it. Instead of putting a boy on the pump handle, we put two big men; that gives us a mist, and that mist gets so well deposited in the calyx of the apple that it catches that second brood when they attempt to go in at that place, and not as Prof. Webster stated, that where he sprayed with Paris green and did not give a fall spraying that 70 per cent. of his apples were wormy. Seventy per cent. of my apples were not wormy, because that Paris green spray stays there all summer; when you use a coarse spray it will fall out. I attribute our success largely to the two men on the pump handle, and I would like to have a gasoline engine.

Member: What kind of nozzle do you use?

Mr. Burton: Vermorel nozzle. I tried this Mystery nozzle last spring, and while it did better work, it is awful slow.

Member: It is suggested that the Grimes Golden is more immune from the codling moth than other varieties; is that your experience.

Mr. Burton: Well, varieties differ so much in the effects of insects on them; I do not know whether the moth attacks them or not. Sometimes they show a great deal more than others, and on the Grimes, if they do attack, the attack fails, like the curculio on the Wild Goose plum. Certainly with us on the Grimes and Winesap the insects do not show nearly so much as on other varieties.

Member: Do you suffer from the rusting of the fruit as the result of spraying?

Mr. Burton: Yes, if you will look on the Jonathan you will find considerable rust. I attribute it to something; when we do not spray we do not have much of it. I am not afraid of it. We find that a russetty apple is better than a non-russetty apple of the same variety.

Member: What I had in mind is, whether you would have the same result if you used a little less sulphate of copper.

Mr. Burton: I do not know; these professors might find that out and tell us how much to use.

Adjourned until 2 p. m.

## WEDNESDAY AFTERNOON SESSION

September 20, 1905, 2 p. m.

The Chairman: Mr. Burton, who has given us such a fine paper this forenoon, requests time for one point which he omitted.

Mr. Burton: I want to mention one matter. Over in Indiana we have a

State Experimental orchard on a small scale, devoted to trying to produce better apples, that is, we want something as good as a Grimes, as pretty as a Ben Davis, that will keep all winter, we want a combination of many apples in one, and we are working hard toward that end. We do much of this work by cross-pollination, which everyone who has ever followed it will find a slow process. It is also expensive, one season I counted up, and found that it cost me 60 cents for every tree that grew. Now, I want to ask you this, that any of you who will be so kind as to save a few seeds out of your choice varieties and mail to me at Orleans, Indiana, it will be planted in that orchard and greatly appreciated.

### 3. SOURCE OF TREES FOR ORCHARD PLANTING.

O. M. Morris, Stillwater, Okla.

What varieties of the different kinds of orchard fruits shall I plant? is the question most frequently asked by orchard planters in Oklahoma, and the next question is usually where shall I buy my trees? Shall I send north, south, or east for them? The question of source of nursery stock is a question, however, that can be answered in quite definite terms. I can not say that the answer to this question will be the same in each state, but I believe that certain parts of the solution will be applicable to all.

Oklahoma has used nursery stock from practically all of the states north and east of her, and several of the southern states. This buying from so many sources has been brought about by two causes. The entire country was settled in a year by people from all parts of the United States. There was no home nursery stock and people were inclined to plant the old familiar varieties and sent to the nurseries in their native states for trees. Another cause was the fact that many nurserymen looked upon Oklahoma as a new and unoccupied field for trade and sent agents to work the new territory. These conditions resulted in much harm to the orchard planters. The people who sent to their old home nurseries bought varieties that were poorly adapted to the soil and climate. The shipping facilities being poor the trees suffered in transportation. They were frequently left at the railroad depots for weeks before being hauled overland to their final destination. The tree dealers and unscrupulous nurserymen delivered trees untrue to name, and ruined by crown-gall, aphid, borers, winter-killing and all other troubles to which the trees of the unskilled nurseryman are heir. Three dealers went so far as to buy the cull trees of the nurseries and label them and sell and deliver them for good trees.

Another condition that contributed largely to the failure of the early orchards was the haste of the orchard planters. Farmers bought and planted trees as soon as the prairie sod was broken.

The foregoing facts are given that you may understand why this question of the source of nursery stock for orchard planting in Oklahoma has become so prominent. The trees purchased from nurseries in New York, Ohio, Massachusetts, Georgia, and other eastern states have given even better results than the average trees from the adjoining states.

The first few years of orchard planting established a few good orchards and a few others have one-fourth to one-half a stand of good trees. The study of the old orchards has been very difficult on account of the exchange of real estate. I think I am safe in saying 80% of the farms, on which orchards were established soon after settlement, have been sold in the last 12 years. Few

farmers keep a map of their orchards and when the farm is sold the new owner very seldom secures a map of the standing orchard.

The first test of the value and vitality of nursery stock is transplanting. The ten per cent. of trees that died before the end of the second season's growth after transplanting was very large in the first orchard's set. A comparison of the trees grown in the different states shows no advantage in favor of any state. The trees from different nurseries in the same state show decided differences in favor of certain nurseries. The trees from good nurseries in New York and Pennsylvania have given practically as good results as trees from Kansas and Missouri, or even home-grown trees. In the study of this branch of the subject I notice that there are three factors of influence. 1st. The tree, its freedom from blemishes, vigor, and vitality when packed for shipment. 2nd. The manner in which the trees are packed and shipped. 3rd. Care of the trees by the planter after they are received. The trees bought from good nurseries in the oldest states have usually graded higher, and have been nearer free from insects and diseases than trees grown at home. There are now several good nurseries in Oklahoma and their trees have withstood transplanting well. The trees grown in Oklahoma and Massachusetts have shown very little difference in vitality in favor of the home grown trees.

The best methods of packing for shipment are practiced by eastern nurseries. I have unpacked trees and plants shipped from the New England states that were in better condition than trees from Kansas and Missouri. Trees poorly packed are sure to be injured if shipped but a day's journey. The trees when received by the planters now receive better care than they did between 1890 and '95, and this is showing in the better stands of trees received in the orchards.

The study of this subject brings me to the conclusion that the trees that are the best grown and developed, and reach the planter in the best condition are the best trees for planting; but with these conditions being equal the home grown trees are the best.

The hardiness of fruit trees in Oklahoma is shown by their ability to endure drouth, hot sun and wind. The trees bought in the north and east have shown great variation in this respect. The northern and eastern grown trees are usually headed much higher and for that reason are at a great disadvantage, but when such trees are headed low they seem to be as hardy as the home grown nursery stock.

The grape and peach crops have been cut short by the winter-killing of the buds. This is a case however of the paramount importance of varieties and not of source of nursery stock. Trees and vines of given varieties from different states show no appreciable difference in their ability to carry their buds through the winter.

The date at which the trees come into blossom when transplanted from the extreme north and south to a central ground has not been satisfactorily worked out. The notes on this point seem to indicate that for a few years the trees transplanted from the north blossom earlier than those from the south, but by the time an apple tree comes into full bearing age it has adapted itself to its new location and is normal in this respect.

The character and quality of the fruit of trees propagated in different localities has received some attention, but it has been very difficult to determine whether certain qualities were produced by the character of the soil and method of cultivation, individuality of the tree, or is a result of the source of the tree. I am aware that climate will cause varieties to vary and that a given variety

of fruit in New York or Georgia might be quite different from the same variety in Oklahoma and Kansas, but I am convinced that the present system of transporting and wholesaling nursery stock will keep this question from influencing the value of nursery trees from any particular locality.

The Chairman: We were interested this forenoon relative to the spraying of orchards; several gentlemen who attempted to stray off into that forbidden pasture, but were stopped by being told that "here is a fence and we will have that pasture opened after the lunch hour at noon;" and I will call on Mr. Pollard, of Lincoln, Nebraska, for a paper entitled, "Spraying the Apple Orchard," and that will let down the bars, and you can all go into the pasture.

#### 4. NOTES ON THE SPRAYING OF FRUIT TREES.

E. M. Pollard, Lincoln, Neb.

My experience has been so limited that I feel incompetent to give any positive information concerning the subject of spraying fruits. What little experience I have had has been confined to the apple. During the spring of 1904 we sprayed our orchard three times. Our first spraying was done as soon as the buds began to swell in the early spring and the second spraying just before the blossoms opened. The object of these two sprayings was to destroy the apple scab. I used the regular Bordeaux mixture using six pounds of Sulphate of Copper to four pounds of Quick lime for 50 gallons of water. In order to destroy the bud moth, the canker worm, and other foliage eating insects I added to the Bordeaux mixture, in both of these sprayings four ounces of Paris green for thirty-three gallons of the Bordeaux mixture. I sprayed the orchard the third time as soon as possible after the blossoms fell. In this spraying we combined the Bordeaux mixture with Paris green using the same proportion as in the first and second spraying. The spring of 1904 was very wet which retarded our work and to a large extent destroyed its effectiveness. A rain would often come and wash away the spray mixture before it would be on the tree an hour. As soon as it quit raining, however, and the orchard dried off so that we could get through with our sprayer, we went to work again. We were as thorough in our work as it was possible to be under these adverse circumstances.

The year 1904 furnished an ideal season to determine whether it pays to spray. There are a great many apples raised in the community in which I live. Until last year we have always shipped nearly all the apples that are grown in our community. As no one else sprays there, the apples grown by my neighbors furnished a good check upon our own fruit which was sprayed as above described. From the hatch of the first brood of the Coddling Moth our apples were almost entirely free from worms while those of our neighbors were very badly affected. In going to a tree that had fifteen or twenty bushels upon it you could hardly find a single wormy apple. Our fruit was also comparatively free from scab. There was a trace of it on such varieties as the Wine Sap, White Winter Pearmaine, Ortley and the Talmon Sweet. As was our custom, we began to buy apples from our neighbors at the opening of the apple season last year. The unsprayed fruit was so very poor, however, that we were compelled to quit handling any apples that were grown by our neighbors. The unsprayed apples were so extremely poor that it was almost impossible to find enough perfect apples from the top of a whole load to even face the barrel.

There were practically no worms in our own orchard until the last brood of the Coddling Moth came on in August. When we gathered our summer apples it was only necessary to grade them according to size as they were barrelled for there were no scabby or wormy apples to be found. When we reached the fall and winter varieties, however, the work of the last brood of the Coddling Moth was very apparent. In barrelling these varieties there was on an average about twenty per cent. to be rejected. From ten to twelve per cent. of which was due to the infection of the Coddling Moth.

Our orchard is located on rather rough ground; there were a good many trees that we could not reach with our sprayer on this account; as the apples were brought to the packing house I could always tell by the appearance of the fruit whether the trees had been sprayed or not. In one row of Ben Davis trees there were about half a dozen trees that we could not get at with the sprayer. These trees were not sprayed at all. When we came to gather the fruit of these trees in the fall they culled about seventy-five per cent. while the other trees in the same row that received the three sprayings only culled about twenty-five per cent. As a whole our work last season proves to my mind beyond any question of doubt that if we raise first-class apples we much expect to take care of the trees and spray thoroughly.

There were certain varieties of fruit that were scorched or given a rusty appearance as a result of the spray. This was especially true of the Roman Stem. It was also noticeable to a limited extent with the Jonathan, Grimes Golden and Wine Sap. The Roman Stem were affected so badly that a great many of them were made unmerchantable. I did not know whether this rusting of the fruit was due to the Paris green or Sulphate of copper. Consequently when we came to spray our orchard this last spring we changed the formula for our spray mixture. For fifty gallons of water we used five pounds of Sulphate of copper instead of six and four pounds of quick lime and four ounces of Paris green.

This year we sprayed once before and once after the trees were in bloom. The weather was favorable. There were very few storms during the time we were spraying. We used the same sprayer that we did last year and were just as thorough in the application of the spray mixture. This season has not been so wet and there is comparatively little scab even in unsprayed orchards. The ravages of the Coddling Moth, however, have been very destructive. Fully fifty per cent. of our apples were infected by the first brood of the Coddling Moth. Just what is the cause of this I am unable to state. I am inclined to the opinion, however, that it is due to one of two causes. We either used the Paris green in too dilute a form, or else it had been adulterated. I am not prepared to state which is the cause of our wormy fruit. I am inclined to believe, however that we did not use the Paris green strong enough. I rather think that four ounces of Paris green is not enough for fifty gallons of water. One thing certain, however, is that last year we used about six ounces and one-half of Paris green to every fifty gallons of water and we met with splendid results. This year we used four ounces of Paris green to fifty gallons of water and met with very poor results.

Our spraying this year has also rusted the apples to some extent. They are not as bad, however, as they were last year.

Thinking that we would try to control or destroy the last brood of the Coddling Moth this year we began spraying our orchard the third time the sixth of August. I think we would have met with better results, had we started a week earlier. Some of the worms had evidently entered the apples

before we applied the spray. For our last spraying we followed the formula given by Prof. E. G. Lodeman in his work entitled "The Spraying of Plants." He says use one pound of Paris green with from one hundred and fifty to three hundred gallons of water. Using the same amount of quick lime in bulk to that of the poison. The proportion we used was one pound and three-quarters of Paris green with two pounds of quick lime for two hundred fifty gallons of water. Our sprayer was run continuously for a week before we finished spraying our orchard. The first two or three days work gave very satisfactory results. The last day or two, however, was not satisfactory. We had about five per cent. of wormy apples in the fruit that was sprayed from the sixth to the ninth of August while fruit sprayed after this date showed from forty to fifty per cent. wormy. I think this difference is accounted for by the fact that in the last of our spraying the worms had already entered the apple and were where the spray could not reach them.

This last spraying damaged the foliage of the trees very badly. This was due I think to the fact that we did not use enough quick lime with the Paris green. In using the Paris green at the rate of four ounces for thirty three gallons of water the same amount of lime is not sufficient. I do not know just how much lime should be used. If I was to do the work over again, however, I should use four pounds of quick lime and four ounces of Paris green to thirty-three gallons of water.

While our limited experience in spraying has not been altogether satisfactory, yet I am convinced that it pays to spray. In my judgment if we expect to gether number one apples it is positively necessary to spray the trees. My observation and experience teach me that it is very important to be thorough in the work of spraying and to apply the mixture at the proper time. The formulas that have been published by the different experiment stations have not been altogether reliable. For instance when Mr. Lodeman says that you must use one pound of Paris green with an equal amount of quick lime for from one hundred and fifty to three hundred gallons of water, he has entirely too wide a range. I have been following Mr. Lodeman's formulas and he has caused me a great deal of trouble which has resulted in my losing several thousand bushels of apples this year. Such a year as this when the apple crop is light all over the country and the price of apples are necessarily pretty high it is a great financial loss to have followed an erroneous formula. I am not inclined to charge my failure this year altogether to Mr. Lodeman for his formulas are practically the same as those issued by the different experiment stations of the country. This simply demonstrates that the work of the experiment station is not altogether reliable when put to the practical test in the orchard. If this formula for Paris green means anything it means that one pound of Paris green added to the Bordeaux mixture with one hundred and fifty gallons of water will not injure the fruit, it also means that one pound of Paris green added to the Bordeaux with three hundred gallons of water is strong enough to accomplish the desired result. As a matter of fact this formula is entirely misleading. The strength of Paris green we used this year was a good deal more than the least amount this formula calls for, yet the results were unsatisfactory. From my experience I think the formula for the Bordeaux mixture should be four pounds of quick lime with four pounds of Sulphate of copper for fifty gallons of water. In this formula there will be enough Sulphate of copper to destroy the scab, yet not enough to give the apples a rusty appearance. When the Paris green is added to the Bordeaux mixture I think there should be used four ounces of Paris green for every



thirty-two or thirty-three gallons of the Bordeaux solution. At any rate this proportion has given splendid results with us. Just how much less Paris green can be used and still produce the desired results I do not pretend to know and I do not care to experiment to find out. When I go into my orchard to spray in the spring it is a great deal more important to me to know that my work will be effective than to save a few dollars on material.

## V. EXPERIENCE WITH LIME AND SULPHUR ON PEACH TREES IN FIGHTING SCALE

W. A. BARNES, YALESVILLE, CT.

Our personal acquaintance with San José scale dates from the year 1901 when its presence was discovered in our 100 acre peach orchard, then about five years old. The orchard had always been well treated and the trees were of good size, vigorous and ready to yield returns.

The discovery of the presence of scale was made in the spring and was a great surprise to us and some little time was used in trying to find out how large the infected section was and in deciding what treatment to give. Finally a very strong whale oil soap wash was used, put on the larger branches with a brush as a temporary relief measure, for the buds were too far advanced to permit the use of so strong a wash as this for a spray. This was all that was done in the year of 1901, except to cut away the very badly infected trees.

### YEAR 1902 TREATMENT

In the meantime various remedies were considered and the lime-sulphur-salt spray selected as the method with which we would attempt to subdue and hold in check the scale. A steam boiler, about new, of some four to six horsepower capacity was secured and the necessary piping and fixtures for cooking the contents of twelve casks at once, so arranged that any one or more might receive steam independently of the others. Casks holding 100 or more gallons were used, fitted with faucets near the bottom for drawing off the cooked liquid. We could learn of no place in this section where we could go for advice and instruction and so, to a certain extent, had, as it were, to feel our way, both as to appliances, arrangement of the cooking plant to do the work economically, and in preparing and applying the spray. Many vexatious delays and perplexing questions as to why, so and so, were more or less present with us during this first season's attempt to save our orchards by means of this treatment. Investigation during the preceding year had shown us that greater infestation existed than we at first supposed could be possible, that probably the whole orchard was affected, here and there a tree or more showing the insect present, but with something like 6,000 to 7,000 trees sprayed, we were compelled to stop by the bursting buds. During this time we used a barrel pump mounted on a single horse stone-boat, one man to pump, two men to spray. We had to take men who had no idea of spraying work and teach them how to do the work. 40 lbs. of lime, 30 lbs. of sulphur, 15 lbs. of salt, 60 gallons of water boiled was our formula for that season's spray mixture, and we aimed to put it on the trees very hot. In spite of more or less faulty preparation, frequent heavy rain storms and the prevalence of high winds nearly every day, and the necessity of covering all the ground possible, the results were to a large degree gratifying.

The general appearance even where they had been badly infested, was that

of strong vigor, the scale apparently being mostly killed. The cost per tree for the job of spraying was estimated at 10 to 11 cents. In the fall of this year several days spraying were done on a section needing such work rather badly, in about the same manner as just stated, but with rather indifferent results. A large per cent. of scale seemed to have escaped harm and the whole of this section was gone over again the next year.

#### YEAR 1903 TREATMENT

In preparation for the year 1903, spring spraying, having found our boiler entirely too small in capacity for our needs, we made arrangements for greater steam capacity, giving us some ten or twelve horse-power and selected a place near water convenient to the orchard, using three barrel pumps on boats, same arrangements as year previous, except one lead of hose in place of two to each outfit. An average output per day for each outfit was ten casks of forty gallons or more, or from 1200 to 1500 gallons of spray liquid per day, for the three outfits. It required two men at the boilers. One was kept busy most of the time stirring the slaking lime and drawing the liquor from the cooking tanks and straining ready for the pump barrels. The other man took care of the boilers, attended to the weighing out and putting together of the materials, water, etc., and taking general oversight of the plant. When working nearby, the spraying outfits came directly to the boiler for their spray, but for points of the orchard more distant, the spray liquid was strained directly into common tanks holding 40 to 50 gallons, fitted with iron plugs, and drawn by wagons directly to the place needed, unloaded on to a moveable platform of convenient height, the empties returning to boiler for use again. This plan kept a constant supply of hot liquid spray ready for the convenient use of the outfits.

This season the formula mostly used was 30 lbs. lime, 20 lbs. flowers of sulphur, 15 lbs. salt, 60 gallons of water, cooking  $1\frac{1}{2}$  to 2 hours. Various other formulas were tried and the length of time of cooking was varied, but we seemed to get the best results in putting on in above just described method. All the trees were gone over the second time when wind was in opposite direction, if possible, to touch every place not reached by the first spraying. It is estimated that we used a total of over 36,000 gallons of spray liquid, which required more than 13,000 lbs. sulphur, 16,000 lbs. lime, 7,500 lbs. salt, costing about \$500.00; cost of labor including horses, \$562.00; cost of coal besides wood used, \$20.00; cost of sundry expenses, repairs, etc., \$25.00; charge for deterioration in value of the plant, \$50.00; a total of about \$1,157.00, as the cost for spraying about 11,000 trees, or about ten cents per tree.

Something like one-half the number of trees sprayed were quite severely cut back, for several reasons, one being that it would presumably greatly lessen the cost of the job of spraying; and we found that said cutting back did greatly lessen the quantity of material and labor used. The last two or three days' spraying damaged many blossom buds as well as the foliage buds. It certainly is not safe to use this spray beyond a certain point of development of the fruit buds.

#### YEAR 1904 TREATMENT

Inspection of the orchard showed very little scale apparent except on a few hundred trees that were not sprayed last year and which were the very first trees to receive the lime-sulphur spray in the first use of this material by us two years before. These trees were thoroughly sprayed in about the

same manner and at about the same cost as before stated. Our plant for making the spray, however, was kept busy the whole of this season, making for others in the vicinity who came to us and took the ready cooked spray away in barrels, in some cases carting a distance of several miles. The charge made for preparing the spray including material was about 2c per gallon or \$1.00 per 50 gallon cask. None of these orchards were treated this present year, the results appearing to be very satisfactory.

The pressure of work required of us in the spring season, from our large nursery and orchard interests is very great, while in the late fall it is much easier to take care of such a job, so in the fall of 1904 we concluded to attempt another job of spraying with the lime-sulphur spray, the work being done on an orchard away from our home place, distant about ten miles. The orchard consists of what is left of a fifteen year old orchard, say 1,500 of these very large trees, about the same number of young peach trees of bearing size and about the same number of apple trees eight years old down to trees one or two years planted. The work was done during the month of November. Two pumps with two leads of hose to each pump were used. 30 lbs. lime, 20 lbs. flowers of sulphur, 10 lbs. of salt, 60 gallons of water were used. The trees were thoroughly sprayed in appearance and no very severe storms interfered to spoil the work. Several of the men cost us \$1.75 per day of nine to ten hours and horses and all expense items were charged. The great difference in the size of the trees renders the cost per tree, estimated at 7c per tree, rather misleading, but the job cost us about \$300.00, including moving the boiler and fixtures, setting up, piping a running water supply, pulling down the plant and returning home again, etc.

#### YEAR 1905 TREATMENT

Very little spraying for scale on orchards here at the home place had been done since the spring of 1903 and inspection of the orchards showed some scale present, though not in numbers sufficient to make any great trouble if not sprayed before another fall or spring. We concluded, however, to spray a part of the orchard so that with bad weather conditions or other hindrances we would not feel so pressing a necessity as if it were all left for another year, which without doubt would be the longest time we could put off the job.

Having now a powerful boiler we did not use the old plant but piped on to the new one. This gave us a great abundance of steam. The slower cooking by the old boiler gave us the amber or brick color in the cooked spray, but rarely the green color which we formerly considered objectionable. The use of the greater amount of steam allowed us to prepare several hogsheads of liquid at the same time, but the amber color came very quickly and soon changed to a green color. Cooked in this manner we had no difficulty in preparing in thirty minutes. This season we dispensed entirely with the salt, using 30 lbs. lime (lump) and 20 lbs. flowers of sulphur with 60 gallons of water. The lime was put in warm water, the sulphur added and cooked with the slaking lime in part of the water needed, then, as the cooking approached completion, the rest of the water added by means of a pipe. If the steam force does not keep the cooking lime and sulphur thoroughly stirred it should be done by hand. If properly cooked and the right materials are used there should be very little sediment left at bottom of cask. We still use a one-horse stone-boat, or sled with pump and barrel on same, and one man to pump and drive, two leads of hose, each at least 25 feet long with extension rod attached, this allowing plenty of room for two men to work. We try to have thorough work done, repeating the work if necessary.

Spraying that was done last April is now (Sept. 16), showing very plainly on our trees and no scale apparent and no damage apparent from the spring spraying, either to fruit buds or foliage. The fruit we have gathered as well as that from other sprayed orchards seems quite free from black spot and fungus and is in general, clear and bright fruit.

As to the cost of this season's spray work, I feel sure that it is less than our first year or two's work, yet not down to the figures per tree that some other orchard men mention. On our large trees we probably used more than two gallons per tree rather than less, and to the cost of this should be added the cost of hauling and applying. In regard to the orchard sprayed last fall: while we killed most of the scale, something seemed to be the matter with the blossoms this spring; they had little vitality, many of them not setting their fruit and a large per cent. more dropped off or withering on the twigs within thirty days after blossoming. We are finally getting but several hundred baskets where we should have got several thousand. I do not know whether to charge the loss to the fall spraying or not. The trees themselves are apparently in perfect condition. Perhaps others may know just where to charge such a loss as this.

I am inclined to think the spray is worth all it costs as a fungicide in giving clean, healthy trees and handsome fruit. While the scale has cost us a large sum of money to learn how to control and keep it down, to date, we are past fearing it for thorough work will certainly keep it in check for two years in succession and possibly three years. Our home city and village fruit gardens are full of scale and but a short time must pass before they are gone and the owners must restock with trees or buy their whole fruit supply, provided no plan is put in operation in the near future to remedy this condition of things. While this condition of things is very unfortunate for the family living in the city it certainly is an encouragement to the thorough orchard man to persevere and conquer, for the careless and shiftless fruit man has little chance to successfully grow fruit in the near future.

#### DISCUSSION.

Member: I would like to ask about the last spraying that was not Bordeaux, that was the lime and Paris green alone with the water?

Mr. Pollard: Yes.

Member: That is the preparation you recommend?

Mr. Pollard: I think if I were to do the work over, I would use the same amount of lime that we use in the Bordeaux mixture to fifty gallons. Our spray tank holds 250 gallons of water, and we used in that a pound and three-quarters of paris green and two pounds of lime, equal by weight; we used a trifle more lime by weight than Paris green.

Mr. Coburn: We always use four ounces of Paris green and four pounds of lime, and sometimes, if the lime is not very strong, we burn our foliage even then, and as far as the lime is concerned, we have found out by experience that it does not matter how much excess of lime you put in.

The Secretary: How much water?

Mr. Coburn: Fifty gallons.

The Secretary: You are speaking of Paris green and lime?

Mr. Coburn: Yes. Now, we have done away with Paris green to a large extent and we have substitute in preference, white arsenic and make arsenite of lime. We find that spray more effective and it remains well in suspension,

needs less agitation when you put it on, and it has been very effective. Although it is just the same as Paris green, if you do not get in lime enough you burn the foliage and burn the fruit, but put in plenty of lime. Then we have tried the disparene, manufactured by the Bowker Co., in Boston, and we find that very effective and less trouble to use than anything tested, and I believe it has been more effective than any other spray we have ever used.

Member: More effective than Paris green?

Mr. Coburn: Yes. Now in Colorado, I want to mention the fact that we do not have to use this Bordeaux mixture; because we have no scab, we have nothing to spray for other than the codling moth and canker worm; we spray for eating insects, we have no fungous growth.

Member: What is your formula?

Mr. Coburn: Four ounces white arsenic, one pound of sal soda boiled fifteen minutes, then when you get ready to use it, put that into 50 gallons of water, and anywhere from four to six pounds, not less than four pounds, of the best slaked lime you can get.

Mr. Beach: I have been very much interested in the account of the work done by our friend in Nebraska, especially since the results he has obtained with regard to the copper sulphate used in the Bordeaux mixture tallies closely with the results which have been obtained by the experiment stations years ago and published in some of the station bulletins. The New York horticultural station for the last ten years has been recommending practically the same formula which is recommended to us here today by the gentleman from Nebraska. In the work there the experiments were undertaken in part to determine what was the least strength that could be safely recommended to do work against the apple scab and the pear scab. You remember when the Bordeaux mixture was first recommended to us, six pounds of copper sulphate and four pounds of lime were used to make 25 gallons of Bordeaux mixture. That made a very thick mixture, difficult to apply, and so in those early days—we may refer to them as early days in the use of Bordeaux mixture—some of the experiments were directed to this question of determining what was the least strength that might safely be used against this pear scab and the apple scab. This formula of 4 pounds of copper sulphate to about 45 or 50 gallons of the mixture was settled upon as about the safe limit in that section of the country for the Bordeaux mixture against these diseases, although a good many of the orchardists in that section have used Bordeaux mixture of the strength of six pounds to fifty gallons in spraying potatoes for blight it is recommended to use the mixture stronger than for the apple scab, and they are using one pound to make 7 or 8 gallons of Bordeaux mixture in spraying for the potato blight.

With reference to the Paris green, let me say, Mr. Lodeman did his work in a comparatively early day, and as you know, he passed away some years ago and the work has not been revised, but I take it that his idea in recommending that range of one pound of Paris green for from 150 to 300 gallons of the Bordeaux mixture was to adapt that to the different kinds of orchard plants which the fruit grower had to deal with. That is, in spraying the orchard that had codling moth and the canker worm and the various eating insects that attack the apple it will be safe to use Paris green at the strength of one pound to 150 gallons, and some even use it at the strength of one pound to 100 gallons in cases of extremity, but when we begin to use it on plums, on stone fruit, we will find that it will injure the foliage, and some of our fruit growers in the East have in times past suffered seriously from

injuries to the foliage by Paris green when it was put on as weak as one pound to 150 gallons, and so it was deemed safe to recommend for the stone fruits, for plums and cherries, not for peaches, one pound for 300 gallons, and I think that that will explain the range that was recommended by Mr. Lodeman in the book referred to. I am very much interested in this confirmation from the Middle West of the early experiments with regard to the safe limit of the copper sulphate and Bordeaux mixture for the apple scab.

Mr. Dunlap: Recent experiences lead me to believe that we are on the verge of a change of this formula, of the combination mixture, so-called, of the Bordeaux and Paris green. I think that there is no question but what the experiments conducted in Illinois this year, taken with the experiments that have been made heretofore, will lead us to change the proportion; we are using too much copper sulphate, or have been, and too little Paris green. The proportion of two pounds of copper sulphate and 5 or 6 pounds of lime and 6 ounces of Paris green is the most effective remedy that we can apply to our orchard, and will do the least harm. The question is not so much to have your solution so concentrated, as it is to have it thoroughly applied, and if you have three pounds of copper sulphate to 50 gallons of water, and you apply it thoroughly, it will do a great deal more good and a great deal less harm than to have a proportion of 4 pounds of copper sulphate to 50 gallons and then apply it only in a desultory way, and only touch a part of the foliage and fruit. That is the thing that is most important, except that there is one other thing that is of still greater importance, if anything, than that, and that is the time of making the first application, after the original blossom bud opens up and you can see the pink of the bloom just showing—then is the time to apply our first spray, and we continue until the tree is in bloom, and then we cease until the petals are practically all fallen, when we commence with our second spray, and from that time on until about seven days after the bloom falls is the very important and critical time to spray for the codling moth especially, as well as the fungous growth. The time of the third application is not material; it can be made any time after the second spray, but for the first and second spray the time is very essential. To thoroughly demonstrate that I tried an experiment several years ago, when I applied the second spray immediately after the bloom had fallen; the application was made to nine rows of Willow Twig apple trees in an orchard, and on the 6th day, or 7th day from the time that the bloom fell, we were half over that orchard and had finished nine rows of it. The nine rows that remained were sprayed three or four days later, after a rain of some 48 hours' continuation, we finished the spraying. The third application was made later on, the same on both places. When we came to harvest the fruit on that that was sprayed the nearest to the time the bloom fell, we harvested 175 barrels of very fine No. 1 fruit; from that part that was sprayed later, after the rain, we harvested 17 barrels of very poor No. 2 fruit, showing that the time of application is oftentimes an important factor.

Mr. Williams: I have been spraying for nearly thirty years and I have made no failure of spraying except when it rained the same night or next day. I sprayed three times this year, twice with the Bordeaux and once with Paris green; I have never made a failure with the Paris green in these thirty years.

#### ARSENATE OF LEAD RECOMMENDED

Mr. Earle: I should dislike to have this discussion pass by in its present stage. I think the most effective, as well as by far the safest poison for spray-

ing has not been mentioned here, except an allusion by Mr. Coburn, and that is, either disparine or arsenate of lead. I think that all the recent experimentation in our station and by our best orchardists in the West and in the East shows that arsenate of lead is by far the most effective spray that can be used and is absolutely innocent in its effects upon the foliage and the fruit. It costs a little more money to buy it, but you do not have to use it as often, for its adherent qualities renders a single spraying sufficient for almost the whole summer, so far as the surface has been covered by that spraying. It would be apparently sufficient in every case, if the application was very thorough, but for the fact that the apples which are very small when the first spraying should be done, smaller than green peas, soon grow to be as large as walnuts and then as large as hens' eggs, and have a large amount of uncovered surface which is exposed to the attacks of the worms. But the arsenate does not burn the foliage, possibly it may burn peach foliage in some cases, but in other kinds of foliage that we apply it to, it shows no burning effects, neither does the fruit. I have used it this year for the first time. Last year I used the arsenite of soda, made according to the formula given by Mr. Coburn, if I understood him, and it burned everything that I used it on if I had it strong enough to do any good; it did a great deal of damage. Many of my neighbors did the same with the same results. I saw orchards after one or two sprayings that looked as if a prairie fire had run through them; now, that was not a good sight and we did not need to have it. I see that there is a great deal of range in these formulas, there is evidently a great deal of uncertainty. Why not give the whole thing up and use something that is definite, that is easy, that is absolutely safe, and that has proven to be very effective. Now, within the last week or two I have been reading testimonials from Colorado, from perhaps 15 or 20 orchardists that are giving the results of their use of this arsenate of lead (disparene is said to be the same thing) last year, and the percentage of fruit that has been saved from damage is remarkable. In one case this was so small as two-thirds of one per cent, only three wormy apples having been found in 400 that were counted out of the basket as they came, entirely by chance, from the pickers onto the packing tables. Senator Crowley, of Rocky Ford, says he saved 95 per cent. of his crop by one spraying just after the blossoms fell. He did the work himself and was sure he was very thorough and only sprayed once, and he had 95 per cent. of good apples. One other gentleman says that he shipped 18,000 bushel boxes of apples from his orchard, and while he did not know how many wormy ones there were, there was so little sign of it that he thought he had not sent away one box full of wormy apples in the whole season.

Now, I believe this is a very important matter. I do not think anything has been talked of here that is so important in its bearing upon the success of orcharding in America as this question of spraying trees. I do not believe we can mention any other subject that touches our pocket books as closely as this one, and we ought to know just what we are going to do and be sure that we make up our minds to do it. I am entirely convinced that the right spray—and I do not know of any other kind of right spray—is arsenate of lead or disparene, that is said to be the same thing; one costs I think just about as much as the other, the arsenate of lead bought in Boston of the manufacturer, that is the American Chemical Company make it. They sell it at 15 cents a pound, in 100 pound kegs. It is in the form of a paste, you mix nothing with it. That is, I am talking about spraying for the codling moth, and have no reference whatever to the copper sulphate sprays which are used for another purpose.

In my own country we do not need to use copper sulphate, as we have no fungi to destroy, but we have the Codling worm, and we are preparing to make a big fight on that insect next year, and we shall use the arsenate of lead and most of us would not use anything else. It costs a little for the material, but the application is easier, it works very nicely through the nozzles, it remains in suspension much longer than Paris green, or than any lime mixture, it makes a white spray that we see when we put it on and know what we are doing, and it does not burn the foliage or rust the fruit.

Mr. Pollard: I would like to ask the gentleman the formula. There is not anything that affects the whole fruit interests of the country as vitally as does the subject of spraying. If we cannot conquer that one thing, we might as well go out of the fruit business.

The Secretary: In quoting that formula from Mr. Lodeman's book you are quoting from an edition of 1896. That is a good way back, remember that experiment station men have been moving right along since that time, and orchardists have been keeping up.

The Chairman: Will Mr. Earle please give his formula?

Mr. Earle: The formula given by the manufacturer, and also by several of the experiment stations, is three pounds of the arsenate of lead, in the form of paste, that is the way it comes, three pounds as you get it in the common kegs, to 50 gallons of water. In the spray tanks such as we use out west, which generally hold 150 gallons, it takes nine pounds of the poison. There is nothing else put in with it, simply put it in clean, and it costs 15 cents in Boston, f. o. b. in 100 pound lots, in 50 pound lots, 16 cents.

Member: Please give us the name of the manufacturer.

Mr. Earle: American Chemical Company, Boston, Massachusetts. It is a very large company.

Mr. Whetzel: I have a suggestion that may be of interest to members who have been troubled about making Bordeaux stick. I have had considerable chance to spray onions and ginseng, and find that if you will add to your mixture two pounds of resin and one pound of sal soda boiled together in two quarts of water until it is a clear brown mixture, you will have no trouble in making it stick. I will assure you it will stick not only to the trees and fruit, but it will stick to you, it will stick to anything for a long time. We find in spraying ginseng and using this solution that we could reduce the number of applications about one-half, especially if it dries on the leaves, no hard rain will ever wash it off. Two pounds of resin, one pound of sal soda crystallized; boil together in two quarts of water in an iron kettle; it should be boiled until it is a clear brown mixture, it will take about one hour, used with fifty gallons of Bordeaux mixture.

Mr. Dosh: I have always regarded it as rather dangerous to put any kind of spray on the blossoms when they are in the delicate state of fertilization, and is it not the same thing with regard to putting on the spray when the blossoms are wide open? I understand one gentleman here advocated that.

The Chairman: I think every gentleman here said that he sprayed beforehand until the blossoms begin to open, then quit religiously until the petals are substantially all gone.

The Secretary: We should remember that when you are using three pounds of arsenate of lead (not arsenite of lead) that you are employing a spray mixture that costs you nearly a cent a gallon, so that it is a somewhat expensive insecticide. Our growers in New York and in the East are finding that they get just as good results on apples for codling moth and have for a number of



years, from arsenite of lime, or arsenite of soda, costing one-fifth as much as the arsenate of lead. The advantage of arsenate of lead is that you can use it in larger quantities, put it on stronger, and it will stay for a longer while.

Just another point, and that is on the question of spraying for fungous diseases. I believe that the first application, that application which is made when the trees are bare of foliage, and when you can cover every part of the twigs if you will, that that is the important treatment. Then you can wrap the tree in a disinfecting covering and protect it against the germs or the spores which float in from outside and our best sprayers are the men who spray thoroughly at that time. One good thorough spraying before the leaves come on is, in my opinion, much more effective than the same amount of labor expended at any later period.

Member: Does that apply to the curl leaf on peaches?

The Secretary: The peach curl leaf must be sprayed while the tree is dormant.

Mr. Emerson: The early spray has not proved valuable at all on our apple scab in Nebraska.

Member: Same in Illinois.

Mr. Garcia: This is one of the most important subjects that we have, and if we do not get through with the others, let us not worry about it, but let us go ahead with this. We can learn more in a face to face talk than by reading any amount of literature. When it comes to the second spraying, that is what puzzles me. I find that unless I know the formulas that I cannot do anything with the second spraying. I can take iron clad rules and do pretty well with the first spraying. When it comes to the second spraying, there is no iron clad rule to lay down, because in New Mexico it is one time, in Nebraska it is another, in Canada it is another. How are we to know just when that second spraying should come?

The Chairman: What do you mean by second spraying?

Mr. Garcia: The second spraying, after the first bloom has fallen off. The first is before the bloom, the second in a few days after that, now what I am getting at is the next one, the third, to catch that second brood, how do we know when to make that application?

The Secretary: Study the enemy under your own conditions. No one from a distance can tell you when to spray. I want to answer Professor Emerson's remark; perhaps I made my statement rather general. I was speaking in terms of broad averages. Take a period of ten years and in my experience and observation the first spray is the most important. You may meet conditions which will necessitate a qualification of this statement. If you had for instance a very dry fore part of the season, if it was exceedingly dry during the time of first spraying and very wet the latter part of the season, naturally your fungi would develop more during the wet period, and you would say if you had not sprayed later in the season that your first spray was more or less ineffective. We meet this kind of thing from time to time, but in terms of broad averages year in and year out we have found the early spraying is the protective spray and one that will pay. I would like to ask Professor Emerson what the conditions were under which he had the least favorable results from early spraying and what conditions prevailed later in the season?

Mr. Emerson: I cannot say as to the moisture. I thought that at the time it did not seem especially dry, but for two years I know that the apple scab has been very late in starting. Whether unusually late in comparison with other years I cannot say, because I have only studied this for two years, but it was

so late in starting that I thought I was not going to get any result. I might say further that the tests actually show in regard to the apple scab, especially in 1904, that not only did the first spray not do any good, but that the second spraying, the one made just before the blossoms opened, did not do as much good as the one made just after the blossoms fell. That was our experience. Of course it is limited to only two years, and I cannot say positively that the springs of those two years have been unusually dry and early, though I can say that the scab has not developed early in those two years.

Mr. Williams: I can answer the question that the gentleman from New Mexico asked. One hundred miles amounts to about ten days; in this climate it is about the last of June up to the first or fourth of July that they spray for the codlin moth and those other insects, and further south they are ten days earlier than that, and further north for each 100 miles about ten days.

Mr. Dunlap: A number of years ago it was recommended by the experiment station that we spray before the foliage started in the spring; Prof. Burrill, of Illinois, held that same opinion, and it was recommended by all stations. Later spraying experience that we practical growers had in Illinois reversed that, and we found by testing it in our own orchard that we had the same result if we applied the first spray after the leaves had started, after these first buds had opened up and before the bloom came out; if we could apply it after the growth started, after we could get some Paris green and copper sulphate upon the nearly open bud and nearly open leaf, that then we got results that were satisfactory as they were when we applied the earlier spray referred to by the experiment station, and all of our experiments since that time have corroborated that view, and Prof. Burrill, publicly, in our State had come to this conclusion, that the first spray before any foliage started at all was unnecessary, unprofitable, and that it did no particular good so far as fungus was concerned.

Mr. Burton: I want to move that we suspend the program and proceed with this subject until the members are satisfied.

The Chairman: The Chair will have to rule that that is out of order. Mr. Williamson is here on the programme, and has come a great distance, and he must make his report before we go away this afternoon, or not at all. Now, common courtesy demands that he shall have that opportunity. We can take this up to-night, or any other time during our sessions. I could not possibly rule Mr. Williamson out in that off-hand way, unless the Society by a vote so orders. [Mr. Williamson's report appears on p—secy.]

Mr. Burton: I withdraw my motion.

## VI. THE TILLAGE AND FEEDING OF ORCHARDS.

C. R. H. STARR, WOLFVILLE, N. S.

I am sorry that I cannot be with you at the meeting of the Society in Kansas City in August, as other engagements will prevent.

You ask for a paper on some topic of interest to the men of the Middle West. I have little practical knowledge of fruit growing in that locality, and have learned from years of observation, that the methods of cultivation, and treatment of fruit trees, best for one location, may not always succeed in others. Soils, precipitation, elevation, and other climatic conditions will enter largely into questions that can best be answered by those

who have made careful experiments and close observation on the spot. And the advice of such men will likely be of much more practical value than that of those from a distance.

But there are other subjects of great importance to all fruit growers, and one at the basis of all success is that of keeping up, restoring, and increasing the fertility of the soil. And the great question is: "How shall we best accomplish it?"

Probably few of the ordinary fruit growers are fully aware of the great drain fruit trees make upon the plant food in the soil. To make this plain I take the following data from Bulletin No. 265 N. Y. Agricultural Experiment Station (a most valuable work which should be carefully read by every fruit grower). Showing the results of some recent experiments, which give us an idea of the amount of plant food used by a full grown, full bearing apple tree in one year. These were obtained by weighing and analyzing the fruit, leaves, and young wood or twigs, but no estimate seems to have been made of the growth of trunk and branches, which should have raised the amount considerably.

"Table VI. Plant food used by one apple tree 30 years old: nitrogen 1.47 lbs., phosphoric acid 0.39 lbs., potash 1.57 lbs., lime 1.62 lbs, Magnesia 0.66 lbs."

Now we will suppose that there are forty of those trees on an acre, and by multiplying the above sums by the integer we get of nitrogen 58.80 lbs., phosphoric acid 15.60 lbs., potash 62.80 lbs., lime 64.80 lbs., Magnesia 26.40 lbs., to be supplied from one acre of land in one year; and when we consider that this tax on the soil has been going on, according to the growth and age of the trees for say thirty years, and must continue so long as the trees will bear profitable crops of fruit; and when we think how little we probably have done during that time, to restore that draft on the fertility of the soil. In many instances the only return is that made by the tree itself in the shape of the fallen leaves. If grass is grown it is usually made into hay, and if the land is cultivated, a grain or root crop is taken off, thus fully accounting for the small amount of fertilizing material that may have been supplied. Should we then feel surprised at the want of vigor and signs of old age shown by orchards that should be just coming into their prime?

Returning to the question: "How shall we keep up the fertility of the soil in our orchards?"

There are a few general rules to be observed. The first is to so cultivate, from early spring to midsummer, as to best conserve soil moisture, to get an early vigorous growth. The next is to grow a cover crop to check the late growth, assist in ripening both wood and fruit, to save nitrates and furnish humus to the soil. Then by close observation and careful experiment try to find the greatest needs and deficiencies in the soil so as to supply the want. Do away with all secondary crops in the orchard, unless you have unlimited supply of manure to make up the extra demand on the soil. Religiously conserve and apply all manures, both liquid and solid, from barn, stables, and house.

Light application of manures frequently applied give best results. Use commercial manures when you have no others, or not enough, and know that you require more. Buy manures for your orchard on the same principle that you would buy oats for your horse.

Do not let the orchard go back, or even stand still, if it is in your power to prevent it; keep it improving all the time.

Above all things do not neglect to supply brains. Use your common sense and best thought on all questions that may arise.

As to the details, every man must work them out for himself, and be governed by the conditions in which he is placed. Some soils may be found wanting in potash, others in phosphates, or nitrogen, or possibly in lime. These wants can be practically ascertained by experimenting on a small scale with the different fertilisers to be obtained; and when you have found your particular want, or wants, try and use the best means to fill them.

After all, what we should most strive for is to so cultivate, fertilize, and care for our orchards as to induce an average annual crop of good fruit, instead of occasional heavy crops, followed by crops which are scant and inferior.

## VII. PRUNING FROM THE MISSOURI POINT OF VIEW.

N. F. MURRAY, OREGON.

Pruning is a matter of great importance in the management of our orchards, and the principals upon which it is founded must be well understood before we can hope to attain satisfactory results. Very much has been written upon the subject by our eminent horticulturists in all parts of the country, and yet we doubt not but what any one of them, with up-to-date experience, could now advise more wisely than in former years.

In fact it would be very unwise for any grower to attempt to lay down an ironclad, inflexible rule for the pruning of our orchards. The fundamental principals of all successful pruning must in the nature of things rest upon a knowledge of soil, climate, species of fruit, variety, age of tree, health, care, and cultivation. In the brief space allotted to my paper it will be impossible to give more than a few suggestions, which we trust may open up a discussion on this important subject that will draw out valuable information from our experienced growers.

Why and for what do we prune our orchards? I answer for fruit: What should be our ideal tree? My ideal is the tree that is so pruned and cared for as to produce the largest crop of well developed and highly colored fruit.

With this end in view I was trained in my former home (northwest Virginia) to prune quite heavy, and to aim to have the top quite open, in order to admit the sun shining upon all parts of the tree, in order to give high color and good quality to the fruit, and with all our efforts we often fell short of securing the desired result, because of the humidity which prevails all over the Ohio River valley, causing much of the fruit to be more or less colorless and cloudy, and the trees often covered with a growth of moss not only upon the trunk of the tree, but frequently extending well up on the main limbs. On coming to northwest Missouri in 1869 I soon noticed that orchards pruned heavily as in the east were dying out from sun scald, in fact this condition prevailed to an alarming extent, so that growers soon began to discuss the question, shall we prune or not prune. For one, I plead guilty of taking the position of no pruning, to the heavy cutting and slashing so common twenty-five years ago. But I do not want it to be understood that I ever took the position that no pruning was necessary, I have always advised, and aimed to practice, annual pruning on a conservative basis.

But let us remember that by reason of the aridity of our western climate that our orchards as a rule will not require near so much pruning as the orchards of the East. However we should observe and remember that the climatic conditions vary much in the West, and that by reason of the country

being rapidly filled up with an energetic class of people, who have built homes, plowed the land, planted orchards and groves, and thus converting the once great American desert into a fruitful land, and later pushing out over the more desert portions of the great West, which by irrigation have become exceedingly fruitful. All of this is having a marked influence upon our western climate, and where our trees formerly needed but little thinning they now require more. It is human to jump from one extreme to the other, and as a rule we find that our western growers, after seeing the bad effect of over-pruning, changed to little or no pruning.

So much has this been the practice that we now find many orchards with a massive top that the tree is hardly able to support in a healthy, normal condition, to say nothing of producing a crop of fruit. The lamentable fact is that all over the West we are now growing too much brush and too little fruit.

We should gradually reduce the top and try, if possible, to bring about an equilibrium between wood growth and fruiting in our orchards. I have observed that in several years past, while our large commercial orchards, made up largely of Ben Davis, have been failing to produce good crops, in fact many of them nothing but leaves, that the old Domine and Duchess, two varieties that require but little pruning and naturally maintain the happy equilibrium between wood growth and the fruiting habit, have not failed to produce full crops right along every year, and that right alongside of other varieties that failed. We have four Duchess trees that have been planted thirty-six years, and a neighbor has some Domine of same age, with their natural open tops, that have been pruned but very little, and yet they bear abundant crops each and every year.

It seems to me that here is an object lesson worthy of our attention.

Best time for pruning, if for wood growth prune in late autumn, and any time during winter, when the wood is not frozen, and finish before the sap starts in early spring. If pruning for fruit, prune in the summer. Prune to secure a well-balanced top, on a healthy stem two or three feet high. Prune to have the top reasonably thin so as to admit the sunlight, and admit the gathering of the fruit. Prune to prevent forks and the rubbing of cross limbs. Cut out all dead and broken limbs, and remove all weak and sickly branches and water sprouts (they are very detrimental to fruitfulness). Use sharp tools, cut smooth, and where limbs of an inch or upward are removed paint the cut to prevent checking. Never consider the job finished till you remove all trimmings from the orchard and burn the same.

On all of our rich western soils, where orchards are well cultivated and cared for, the tendency is to produce an overgrowth of wood; on all of these orchards, summer pruning should be practiced and root pruning will be found beneficial.

On poorer soils, where humus is lacking, the tendency will be found toward over-fruitfulness; in such orchards the pruning should be done in winter.

Time and space forbid an attempt to speak of the proper amount of pruning for each species of fruit, suffice it to say that all our orchard trees, the apple, pear, peach, plum, and cherry should be carefully pruned once in each year, the pear will require the least amount of pruning, and the peach the most, and on the peach it should consist of cutting back, and removing all dead twigs, and weak sickly branches. In conclusion permit me to say that my advice to every young man who contemplates going into commercial fruit growing is to go and take a thorough course in one of our horticultural col-

leges, for we are living in an age when we can't possibly afford to be ignorant of the fundamental principals that underlie our profession.

The Chairman: We will now hear the report of Mr. Williamson; his subject is: "Grading of Fruits."

### GRADING OF FRUITS.

Mr. Williamson: Mr. President, ladies, and gentlemen: When I first took up the consideration of this matter it seemed to me that it might be wise for this body to put itself on record as in favor of some such legislation in this country as the Canadians have already initiated in their own. They have, as you know, a "fruit marks act," and a very honest act it is, and I would like to feel that we are in a position to wisely recommend similar legislation in this country, but I believe we are not in a position yet, nor shall be without a long term of discussion in just such bodies as this to determine the wisest way in which to put the body of our suggestion before it can be enacted into statute law. I say this because I have given to very few subjects more attention than I have given to the matter of the grading of fruit. I am the author of the first positive definitions promulgated on the subject, being the author of the definition which prevailed in the National Apple Shippers' Association for number one apples. I was always opposed, I may say incidentally, to a definition for number two, because number two seemed to me to be a grade which you could make just as good as the public will stand for. There is the point in this imperative canon of judgment in this matter, that an apple must be so good, or it is no good at all.

But in regard to the question of the number one apple, I had very positive opinions, and I prevailed upon those who are associated with me in business shipping apples on a large scale, to adopt a definite recommendation, which I believe has been the basis of very similar definitions in other bodies since, so that it did not come to me as an entirely novel duty to be assigned to the consideration of the question of grades, or the cognate question of inspection, and yet I say to you, were I to attempt to-day a definition, I should do so with considerable fear and trembling. There is such a thing as ironclad and un-deviating confidence with which a very young man approaches a subject that is never witnessed in his after-life. I do not believe that at the time I defined the number one apple I quite realized the practical difficulties in the way of getting the absolute article for which the definition called, and I never have heard of but two contracts made under that definition, and a definition which does not invite a wider making of contracts, which does not appeal to both sides of a bargain in such a way as to be very frequently used, leaves something in the way of a desirable presentation in words. On the other hand, in approaching the question of definition, there is a tendency to make your definition too elastic, so that it can be interpreted in any way that the individual who happens to be considering the subject may choose to have it; that is the other danger to the question, the danger which the great American novelist very felicitously put when he spoke of the diplomacy of a certain local statesman, a diplomacy which had not been very glorious in result, by describing it as a "hand of mush in a glove of the same." We are on the one hand in danger of making too drastic definitions, and on the other hand of making definitions that mean nothing whatever, and therefore I say to you, Mr. President, and to the members of this Society, that I believe in regard to the very important questions

which you have committed to the gentlemen who are associated with me, that you will have to give us more time. We are not ready; we cannot, in the nature of things, be ready to present to you such definitions as we can stand behind with the solid weight of our judgment and of our experience, and it is better to wait until the right word comes; it is better to wait until we can decide what is the widest definition, not simply for a number one, but for a number two, and for whatever other grade you may adopt, and also in regard to the enabling legislation which will give the sanction of law to the definitions which are made, as they should be made, by commercial or professional bodies which have to do with the subject of grades.

When we ask the assent of law to the definitions which we promulgate we must be certain that those are the best definitions to which our experience and judgment have led, and I submit that we can very well work under the definitions which various other bodies have put out, until we have something in the nature of an improvement to suggest, and the direction in which that improvement may come I can only surmise, I do not know; but I am very sure that we are to get it along the line of discussion in just such bodies of men as we, where those of ripe, practical experience meet the trained mind of the investigator, where you have perhaps the best combination possible under our institutions of men who are led to this work by the love of the thing for which this work stands, and by men whose heart and brain are wrapped up on the practical side of it.

You have in this body a very happy combination of men of both these types, and where the suggestion of the man of the college might seem to be an inapt one and unwise one to the man who looks at it from the standpoint of him who packs and sells apples, you will get the corrective, if corrective is needed, for whatever is unwise or wrong or falsely stated in the position taken by the man who only sees it from the standpoint of what is theoretically desirable.

If we are going to have the protection of law for grades, however, we must remember this, that we have got to protect not simply the best grades, but the poor grades. We do not have to protect the best grades nearly as much as we do the poor, because the rich man, the buyer of the best, can take care of himself, but we do need to protect the article that is offered to the poor, to the man to whom only the poorest fruits can be given. We cannot make a definition which will shut out from him a part of the great apple crop, or other great fruit crops. It may be that, that part which is the least desirable is that which is the only one possible to him. But however presented to him and whatever grades we adopt for those parts of the crops which he uses, we ought to insist on the fundamental note of honesty; that whatever is offered to him shall be just as it is represented. We cannot do more for him; we certainly cannot do less for him, and I apprehend that the greatest difficulty that your committee will be confronted with will be in just wisely framing these definitions, if definitions there are to be for those parts of the crop which are given in the shape of lower grades to the great mass of the consumer, the earner of low wages, who is as fond of his fruit, coming to him, perhaps, in a less desirable form than others, but who is just as fond of it and just as accustomed to it and needs it as an essential part of his diet as the other man who can better take care of himself.

I would like to add a word of personal weight, whatever it may be, to what Professor Craig has said in regard to the earliest spraying. I am a very large user of spraying materials and I do not intend to misuse a dollar, because

it is a dollar of my own money; I have used this year a carload of vitriol and I have used over \$1,500 worth of arsenate of lead, which, with all respect to the gentlemen from Colorado, I consider fully as good as disparene, having tried them both, and I will say that my experience, now extending over seven years, has convinced me that the very first spraying, while the poles are bare, is the only one that I can do thoroughly well all over the tree and that I can do work there which saves a whole lot of work later. I think the weight of the experience of all the seasons during which I have sprayed and by which I have been at an expense every year running from \$5,000 to \$10,000 of money, I believe the weight of my experience lies along the weight of his assertion that the very earliest spraying is the most important one, and I think that I am even more confirmed in this year's crop in that view than in any other preceding year.

### DISCUSSION

The Chairman: The Chair wants to ask Mr. Williamson that he will write out for the use of the stenographer such a stagger at these definitions as he and his colleagues have so far been able to arrive at; then we can see them and work them over during the next two years.

Put them in writing, please, and hand them in to make a part of the record of your report, which has been a very interesting one.

Mr. Williamson: I shall be pleased to do so.

Mr. Bassett: As I understand, Mr. Williamson is the promulgator of a definition of what a No. 1 apple is. I would like to have it, if he has time to give it to us.

The Chairman: Are you able to stand up and repeat it?

Mr. Williamson: I do not know that I can give it literally. It is an apple normal in shape and color, and, as I first put it, free from the action of worms, break of skin, or any fungous disease, and hand-picked from the tree. No apple can be No. 1 that is not a picked apple. Substantially that is the definition as I first gave it. I would only change that by adding the word "practically" to the word "free," because I do not believe that it is in the power of anyone to produce an absolutely perfect barrel of apples, humanly speaking.

Mr. Bassett: What size is "normal?"

Mr. Williamson: In regard to size, that differs in the class of apples. Such apples as the Ben Davis and Baldwin must be not less than two and one-half inches in diameter, but apples like the Wine Sap and Jonathan can be two and one-half, but not less in the widest diameter.

Mr. Bassett: In which class would you put Grimes?

Mr. Williamson: I should put Grimes among the first class.

Mr. Bassett: How is the Fameuse?

Mr. Williamson: Second class—wait, no, that is the Snow apple in this country. There may be sections where it may grow to such sizes that it may be classed first. That is one of the practical difficulties that I hinted at, that you cannot make a law that would be good all over the United States. The size of the apple according to the section from which it comes should practically determine what should be No. 1 there.

Mr. Bassett: Just as to size?

Mr. Williamson: Certainly.

Mr. Bassett: Do you attempt to define a No. 2 apple?

Mr. Williamson: Never did.



Mr. Bassett: Does your association?

Mr. Williamson: It does; its definition for No. 2 is practically the same as No. 1, except that it means apples that go under that size, two and one-half or two and one-fourth inches.

Mr. Bassett: Is a No. 2 apple free from worms?

Mr. Williamson: It should be practically free from worms, according to definition.

Mr. Bassett: Then an apple otherwise perfect, but with a worm in it, would be classed where?

Mr. Williamson: It would be given under third grade.

Mr. Bassett: Is that the practice in Illinois in selling apples under a contract that specifies No. 1 and No. 2 apples?

Mr. Williamson: If you act under a contract you ought to get that, but, as I said before if you remember, I never knew of but two contracts made where the rules of the Association were definitely stated.

Mr. Bassett: May I further ask, does not the Association then establish a fancy grade and a No. 1 grade?

Mr. Williamson: Practically it does.

Mr. Bassett: That is just the point I want to make.

Mr. Williamson: Yes, that is why I say, that as long as you go below the fancy grade, to be careful to make a definition that will cover the lower grade, on the assumption that they will go into barrels. There is, as you know, a very serious question as to whether anything under a real No. 1 apple should go into barrels.

The Secretary: I would like to ask Mr. Williamson what the practical objections would be to an optional inspection law—a law which provided the machinery whereby exporters of fruit might have their fruit examined and exported under the government brand, but which did not require it? Merely have the machinery and the opportunity whereby any exporter who is sending abroad—I am speaking now of foreign shipment—might send his fruit under the government brand, and which would assure the purchaser that its grade was uniform. What are the objections?

Mr. Williamson: I don't believe there could be any objections to that, provided we could make the American Congress see the feasibility of the project and give an appropriation. I should think it ought to be a very wise thing.

The Chairman: Your Association would co-operate in securing a law of that sort?

Mr. Williamson: I am inclined to think so, although I know there are certain men who prefer chaos to any laws.

The Chairman: But do they rule in your Association?

Mr. Williamson: I think not; it would have to be determined by a vote.

The Chairman: Would it, in your judgment, be best to try for securing through the Department of Agriculture a provisional inspection that would give every man the privilege of inspection, and the government guarantee, without requiring it; would it be well for this Association and all kindred associations to ask for such; then maybe we will receive it?

Mr. Williamson: Well, I think you would have to think it out and digest pretty thoroughly before you ask for anything.

The Chairman: Appoint committees and get it in shape?

Mr. Williamson: Yes, the sooner we move, the better. I am one of those who believe that the highest advantage to all concerned is in high grades and in a thorough inspection.

The Chairman: If this meeting, before it adjourns, should appoint a committee of, say, three, to co-operate with others, would your Association appoint a like committee to have this matter in charge?

Mr. Williamson: I think I may say safely that it would.

Mr. Williamson: After fifty years of packing apples, I know that it is utterly impossible to have a first-class apple to-day, and have the same first-class apple to-morrow or next day. The fruit is subject to decay under all and every different kind to condition that that tree may come under. It may be first-class fruit to-day and to-morrow it may not, therefore you cannot make the law as strong as you say.

## IMPROVED METHODS OF MARKETING.

C. E. BASSETT, FENNVILLE, MICH.

The fruit grower, like the producer of any commodity, is chiefly concerned with two factors, viz., the art of production and the art of selling. Both of these factors must be given proper attention, if the grower would attain that degree of success which he desires. The first requisite in successful marketing is to have a first-class article to sell, but even that condition is not all-sufficient. We should do our utmost to see that our fruit goes into the hands of the consumer in the best possible condition and that the prices paid us are an equitable share of what is paid for the fruit by that consumer.

The reason why most fruit growers have given so little attention to the marketing of their products is because their entire energy has been given to the production and preparation of their fruit for market. Our product is perishable, and where sales cannot be made for spot cash, it is often thought necessary to make consignments to commission firms. Probably no class of men are more generally condemned, or more fully trusted, than the commission men. Millions of dollars worth of produce are sold by them upon honor, with scarcely a restraint or check upon their actions, except such as may be dictated by policy or their own conscience. It is little wonder, then, that selfish and dishonest men enter this field of trade, to the constant annoyance of decent men, and that such suspicion as may be engendered by rascality will often attach to the best firms in the same line of business. I honestly believe that commission men, as a rule, compare favorably with the men who patronize them. My criticism is not so much of the men in the commission business as it is of the unbusiness like system. When I cannot have something to say as to what I shall receive for the products of my work, then I want to change my occupation. During the past eight years I have not shipped \$500 worth of fruit on commission, but have sold our entire output right at our point of shipment. If you want to ship on consignment, select one good, strong, honest firm, and then make that one your partner. Some make the mistake of dividing their shipment among a dozen firms that do business on the same street, thus putting their fruit in direct competition with itself.

But let us look at the horticultural situation and see if our present methods are not in need of improvement. As a result of careful investigation, I am convinced that a bushel of peaches for which the consumer pays \$1.50, does not net the average Michigan grower over fifty cents! This means that the grower pays twice as much for getting his fruit to the consumer as he receives for his own labor in producing it. Is such a condition fair? What ordinary

business is there which will stand such a constant drain and profitably exist? I believe that I have here stated the disease with which our business is suffering. What is the remedy? There's the rub. Abstract propositions will not satisfy us. We want a practical plan, and such is what I wish to present.

Fifteen years of careful study of the market problem lead me to the observation that, under individual effort, i. e., when each grower markets his fruit independent of his neighbors, the following faulty conditions exist:

FRUIT is (1) of low grade.

PACKING is (2) poor; (3) not uniform; (4) in many styles of packages; (5) consequent high cost of packages.

TRANSPORTATION is in (6) less than carload lots; (7) at high rates; (8) with poor service; (9) heavy losses in transit; (10) with no influence to secure better service.

MARKETING is done (11) on consignment; (12) too many middle men; (13) no remedy against dishonesty; (14) many shortages, with no system of tracing them.

Such are some of the principal faults of our marketing system, under individual effort, and any system which corrects one or more of these faults must be considered a desired improvement. I know of no more forcible way of showing how coöperation can help in solving these difficulties than by telling you of some ways in which it has aided us in the fruit belt of western Allegan County, Michigan.

One of the first drawbacks that we had to contend with was the cost of transportation. The location of our orchards is such that we can patronize either the railroad or the boat lines, but there has been no competition between them. An express company operated over the fruit train for about fourteen years, furnishing very poor service and stubbornly maintaining a six and one-half cents rate on fifth-bushel baskets to Chicago, 140 miles. We had no organization and the efforts of individuals to get better or cheaper service were of no effect.

Matters were going from bad to worse, when, in 1891, the Fennville Fruit Shippers' Association was organized, and the "granger" system of shipping fruit was adopted. We have a local agent, who receipts for and loads the fruit into ventilated cars, holding about 2,500 fifth baskets, for which he receives \$2 per car. We secured a special fast freight, which starts from Fennville every evening, Saturdays excepted, for Chicago. The cars are all billed to our Chicago consignee, who does the unloading, distributes the fruit among the several commission firms to whom the several shippers have consigned it, attends to the freight, shortages, etc., receiving for this service \$4 per car.

As the result of this coöperation, we have been able to secure the general adoption of a standard climax package, at a saving in their cost of at least one-half. The freight rate has been lowered from the express rate of six and one-half to two and one-half cents, and, the boat lines having to meet this reduction, every shipper in our fruit belt has been equally benefited, whichever way he shipped. All shortages have been promptly paid. In one season our fruit section shipped 6,000,000 small baskets of peaches and the saving to the growers that year by the association was not less than \$200,000.

Not only have we obtained better service at much less cost, but it has been done with a cash profit to the association. This profit amounting to many thousands of dollars, has been expended in the grading and graveling of our public highways, until we now have reconstructed several miles of first-class

gravel roads. Before our association began this work, 200 or 250 baskets were considered a good load, while now our teams handle more easily 500 to 600 baskets. Our combined influence also led the railroad to donate 300 cars of gravel for this road building. We find that, where a single individual has trouble in getting the ear of the railway officials, the representatives of an organization of 400 shippers receive a most respectful and gracious hearing.

Our local horticultural society has also been trying for some time to establish a local fruit market, and get outside dealers to come to us and buy. Advertising booklets have been mailed all over the country, with the result that we have buyers with us all through the season, and their competition has kept prices fairly good—generally higher even than the Chicago market.

A review of the work done by this association will show that we have, in a large measure, corrected faults numbers 4, 5, 6, 7, 8, 9, 10 and 14. There still remained some important faults to be remedied and another form of coöperation was resorted to, which, with us, promises to be of permanent benefit—the central packing house system.

We have had five of these packing houses at Fennville, and although the system is not fully perfected, it has already demonstrated its efficiency in handling and marketing the products of large orchards. Usually six or eight growers combine and erect a large packing house beside the railroad. Their fruit is brought direct from the orchards to this central packing house, where it is carefully graded and packed, each grower receiving credit for the number of packages of each grade. The foreman and packers, having no financial interest in the fruit, pack top and bottom alike, and every basket can be guaranteed. Solid cars of one straight grade can thus be purchased any day during the season, and we find that buyers will pay more for this fruit than where they have to drive around the country and pick up a carload, of as many grades as there were packers.

The obstacles in the way of this central packing house plan may be mentioned as: First, what may be termed the natural conservatism of the average grower; second, the lack of confidence in his fellows, and of the results to be obtained by association and combination of interest; third, some expense in putting up and equipping a plant; fourth, a very high order of ability and good judgment, combined with experience in handling help, on the part of the manager, who must also command the confidence of the patrons.

The principal advantage is the application of modern and systematic business methods to the fruit industry. Organization is the basis of modern successful business operations, and only those lines of business that are well organized are successful in a marked degree. The statement is often made that an organization among farmers is sure to fail—that ‘farmers will not hang together,’ etc., *ad nauseam*. I think the experiment among our packing houses disproves this statement, and I believe that the tendency among progressive fruit growers is towards such organizations. I believe that these separate packing houses will eventually grow into a federation, with a central head, that shall keep in touch with all of the principal markets and keep the units of this federation informed regarding markets and prices—a fruit growers’ “trust,” if you please.

A review of the plans of the central packing house shows that nearly every fault in marketing that I have enumerated is by that plan corrected, when the system is fully carried out by men of marked business ability.

There is another form of coöperation which we should all favor—coöperation along lines of legislation. We may not all agree as to the desirability of

a law, establishing federal inspection of fruit in this country, similar to the Canadian "fruit marks act," but I submit that, if every State in the Union would pass a law, compelling every packer of a closed package to place his name upon each package, there would be a more reputable class of packing done, with the result that better fruit would be produced and more fruit consumed, to the increased profit of all growers. I claim to be as honest as the average fruit packer, but I know that, if I were obliged to place my name upon every package of fruit that left our packing house. I would, for the credit of my good name, take even more care in the grading and packing of our products.

If agriculturists could be brought to realize what coöperation might do for them, who could live without paying them tribute? In my experience among growers, I have found among them *parasitics*, who would oppose coöperation in any form, for no other reason than that the less his neighbors know, the greater his opportunity to profit by their ignorance.

Coöperation is the beacon light of emancipation to the farmer, and the only means by which that traditional fear and suspicion, born of wrongs and injustices as far back as Jacob and Esau, can be dispelled. Where coöperation is the watchword, the community is immune from the adventurer, who figures farmers generally as his legitimate prey.

# A Chapter of History and Sentiment

WEDNESDAY EVENING SESSION

September 20, 1905, 8 P. M.

The meeting was called to order by the Chairman at 8 P. M.

## I. ORIENTAL HORTICULTURE

CAPT. C. L. WATROUS, IOWA.

RETROSPECTIVE.

An old Scotch song of our grandmothers, a song of love and border warfare, began:

“It fell on a day, on a bonny summer day,  
When the corn grew green and yellow.”

And so my story began, some sixty or more years ago, in a little, old, unpainted school house, built in the wilderness at the beginning of the last century. A dozen children sat through the long warm hours studying a very little and watching a great deal through the open windows, the shadows chasing one another over the meadows, while the bobolinks flitted from one tall stem to another and sang as if their hearts would burst. I believe bobolinks never sang elsewhere as they did in those hillside meadows as the grass grew tall in June.

There presided over the children a dreamy eyed young virgin who looked a little after the school and much straight ahead or through the windows with eyes that seemed to see something far away, but not the old school house nor the children. The distraction of the virgin during those long summer days left us small ones with much leisure and our own devices, “and thereby hangs a tale,” even the whole long story I am now standing up in my old age to tell you. Concerning the name and nature of the strange malady affecting our teacher, we small ones were as innocent as she was herself, but there was a wedding a year or two later and she went to the home of a ruddy-cheeked, strong-armed young farmer who used to swing a scythe in those meadows, and, in later years, I came to think it was the shadow of him that she saw and the song of love in her heart that she heard, while we saw only the cloud shadows and heard the song of the bobolinks.

Now, there was a library in the old school house, with not a child's book in it, but there were the lives and voyages of Captain Cook, of Magellan, of Drake, and Cavendish, and Dampier, and many another. On one of those idle days one small boy with fervent hair and freckles on his nose looked into one of those books and then into another and another and thereafter lived and dreamed among strange islands and stranger men and birds and animals, amid spicy odors and gorgeous colors of the tropics. Then and there he resolved to grow big as fast as ever he could and then to leave the big hills for the life of a sailor among those islands of fragrance and color and over the enchanted

seas. The dream and the longing always abided, but sixty years of eventful life had to pass before Thanksgiving evening, 1904, when the dream began really to come true. The whole journey was filled with events as strange as dreams.

#### MEXICO AND LIFE ON THE TRANSPORT.

There was a real Spanish bull fight over in Mexico which I should like to tell you about did I have five minutes—how the bull is insulted, tormented, deluded and assassinated, with no fight about it from beginning to end. Between El Paso and the Pacific Coast, you go through the drained out bottom of a sea. Everything shows this and you feel as certain of the fact as when, going through a forest, you come upon a tree stump with ax marks upon it and say, "Here stood a tree and here has been a man." From Los Angeles to San Francisco by the Coast Line you ride mile after mile with the broad expanse of the Pacific rolling before you, the roar of the surf flooding the ears. It is a fitting overture to the symphony of a voyage to the other side of the earth.

And then you are on the great transport with the tremendous rollers of the Pacific fairly under your feet. It is a small city. In the upper cabins, military and naval officers, civilian employees of the Government, teachers, missionaries, all in some way connected with the national service, with their wives, their cousins, their sisters, and their aunts. On the decks below are soldiers, sailors, and mechanics, and last but not least, some two or three hundred Filipino soldiers with their band of eighty pieces. These youngsters furnish more fun than an acre of monkeys—a never ending source of amusement to the more staid Anglo-Saxons. Probably the Pacific Ocean never was soothed with more luxurious music of the dreamy Spanish kind than during that long, sunshiny voyage.

#### TROPICAL HALFWAY HOUSES.

After some seven or eight days come the Sandwich Islands, with fragrant airs and flying fish. The volcanoes are all there yet, in plain view, but the fires are gone out as far as we see. The harbor of Honolulu is a magnificent crescent, with shining tropical trees and white buildings next the water and frowning battlements of volcanic ridges close behind. Our officers and ladies blossomed out in white raiment, in December, and the raiment fits for every day in the year until the wearer goes again to the north. Then thirteen joyous, restful, lazy days of pure do-nothing and vegetation before you see land and that is only Guam, which does not count. No business cares, no work, no sickness, unless you eat quite too much, and the best cure for hurry and overwork that you can possibly find in this life. Two books were carried. Shakespeare and Holy Bible, but neither read enough for good or harm. Three times each day you go to the most bountiful table and once to bed. Over and over I thought of the Scripture account of that day when the Hebrews gave their rings and bracelets to make a calf, "And the people made a feast: they sat down to eat and to drink and rose up to play." After waiting sixty years the dream came true and the truth was better than the dream.

From Guam is another week of sunshine and warmth and rest, and then, one morning, the mountains of San Bernardino straits rise close at hand, on either side; on the north or Luzon side showing the smoke of an active volcano, on the south or Samar side steep sided mountains; and at the water's edge, the shining leaves of cocoanut and banana and the grass thatched homes of the natives. In yet twenty-four other hours we approach the entrance of

Manila Bay, passing Corregidor, where Dewey first heard Spanish shells, next Cavité, where yet lie some of the wrecked Spanish ships, and where proudly ride some of our handsome new battleships, and then drop anchor in front of Manila, after twenty-seven lovely restful days of the ocean. You take a small steamer for the dock and enter upon strange scenes. For all that you can see it might be the city of another planet. The massive battlements going back centuries, the streets with pavement of twenty feet and walks of thirty inches in width, with the small brown people, the buildings no more than two stories high, with massive walls, the great churches and monasteries, the hotel entrances where the carriage drives straight through the office to the stables in the rear of the open court about which the building is erected. You sit in your carriage until in front of the clerk's desk, and, stepping down, register your name. It is fine for a lazy man. If you walk, you realize that it is hot, hot, always and evermore hot, every day of every month of every year. You are in a hot house. The trees and plants are all hot house trees and plants, always with green leaves, blooming when they please, some in every day of the year, so that you may always have flowers.

#### FILLIPINO FLORA.

It was the end of December the day I landed and one of the first strange trees in bloom was the elang elang, from whose pale, golden blossoms that perfume is made, dear to the young man when he would be sweet to the maiden of his choice. In open squares you notice rubber trees, the giant Banyan, the magnificent Mango, ready to bloom in a few days, and many others whose names you learn with difficulty, or not at all. You read of gorgeous tropical colors, but you see green, green until you think it is a world of green, when suddenly there flames before your eyes a magnificent burst of scarlet or crimson or gold and then straightway all is green again. It is a strange sight to see whole tree tops, forty feet from the ground, lighted up like a conflagration. The volcanic soil is as rich as richness. Fruits are everywhere but practically all as they grew spontaneously. The hand and brain of the horticulturist have been wanting. Nature has done so much, life is so easy, so little is needed and so much is at hand for the reaching. Why worry about to-morrow? Coconuts, bananas, a little rice, fish, fresh from the ocean or stream, the less clothing you have the more comfortable you are. Why hurry or worry? Do you know? So goes life with the natives of the tropics.

#### FRUITS OF THE TROPICS.

Across a few hundred miles of sea the Chinaman has oranges of as good quality as the American. The Leitchee, a most highly prized fruit in the Orient—when dried, something between a raisin and a cherry—grows spontaneously in the Islands, but the wild form is not edible and no one has taken the trouble to graft or bud the improved Chinese varieties upon the native stocks. One crying need of the Islands is a trained horticulturist—able to breed plants and to perform the simplest operations of the nursery—to begin the work of changing the quality of their abundant fruits. Our Department of Agriculture should send a capable man and you pomologists can do a good work by urging prompt action. We should have Leitchee in the South. It is a small evergreen tree, hardy up to latitude twenty-eight in China and an abundant annual bearer. The Island oranges are a little better than the wild Leitchee, but not much. The fruit is abundant but insipid. The first one is not bad. Afterwards you



realize that the abundant juice is little more than sweetened water. The most common fruits near Manila are the orange, lemon, lime, pomelo, or grape fruit, guava, tamerind, cocoanut, banana, mango, papaya (papaw) or tree melon. North of there I saw plums and a so-called and so-appearing little apple. It is only as big as a thimble, almost tasteless and has one seed, like a small cherry pit. A full grown mango tree in bloom is one of the most beautiful and impressive trees imaginable. Sixty or more feet high, with a spread of fifty feet at least, abundant, clear, shining green foliage half hidden by the golden racemes of flowers. It is a gorgeous spectacle. Southward throughout the archipelago you find sugar cane, coffee, pine apples, and cacao—the last growing on a large shrub or small tree, the fruit looking like that of a cucumber magnolia, and as full of the chocolate beans as the magnolia cucumber is of seeds. In the extreme south are still others, the mangosteen, the most delicate of all tropical fruits, with sections like an orange, growing on a tree much like that of the ox-heart cherry; the bread-fruit also, and many others. A monopoly of the strongest hemp fiber in the world is here, for the abaca or hemp banana has been tried in many other lands of promise but refuses to be at home and do its best elsewhere. The so-called Manila hemp is solely a banana, full sister of the fruit banana of commerce. The fruit banana affords an inferior fiber and delicious fruit; the hemp banana an inedible fruit and the strongest fiber in the world. Each refuses to do the work of the other. The cordage for the world can be grown there and many other things besides, but the people are no more able, if left alone, to maintain a free government than so many coyotes. This is said of the vast majority. If we are given wisdom to stay there and protect them from themselves so that the industrious can receive and enjoy the fruits of their labors, we shall give blessings untold to them and abundant gain to ourselves. If we fail in this duty to them, God help them and forgive us our failure; if it be His high will to do so.

I should like five minutes to tell you about their ideas of free government, but have not one. The manifold species of fraud and intimidation whereby the toiler has been despoiled by those with more power or more craft, would fill you with amazement. The trickiest official thief in America would turn green with envy at the spectacle.

#### A STAY IN CHINA.

After the Philippines there were some wonderful days in Hong Kong. There the British have established a Botanical Garden wherein you may study the trees of a tropic belt around the world, from east to west and back again. They are all labelled, showing their names and places of nativity. In one ravine you might imagine yourself on the earth away back in the time of the coal measures, nobody knows how many million years, for there are the giant tree ferns which geologists tell us grew, flourished, fell down and formed the vegetable matter for coal. The British head forester has a number of native clerks, but they all work in different rooms from his own, going to him when called, standing before him while doing their business and then out. The British believe that the native races of the East respect the white man more and are more inclined to follow his good advice with such treatment.

Then, there was a day in Canton, searching for young plants of the Leitchee among the nurseries up the Canton River beyond the city—a day in one of the famous house boats wherein families live, children are born, grow big, are married and die and other generations after them. It is a narrow, long boat with a covering over a small place in the center, the rear open for freight and

the front offering standing room for those who work at the oars. There were a man, his wife, an old crone, seeming to be the mother of one of them, also two babies. At the sides of the space, under the canopy where they stowed me, were numerous chickens and what else I do not know. The man stood at one oar, the wife at the other, with the old crone on a stool helping her. You would think a hundred times that the next moment would see your craft overturned by the crowds of larger ones passing, but save a few ejaculations and a little pushing here and there nothing happens and you continue your way. Leaving the river we go up a creek and then into a canal where the women are left with the boat and we men hurry along little dykes by the side of water courses from which the sediment is taken in winter and placed on the land—to visit several nurseries of pocket handkerchief size. Almost everything seemed growing in pots. We found what we sought, stocky little trees, two to three feet high, already covered with fruit buds breaking into bloom.

Then there was an afternoon on foot through the streets of Canton. I had almost said runways, for I cannot get out of my mind the idea that their streets are like the runways of rats. The resistless throng of humanity filled these passages to the brim, mostly bareheaded and barefooted, in February, many carrying huge loads swung at either end of a stout bamboo stick over the shoulder. It occurs to a European that unless the punishment after death be very severe it would be better to be dead than to exist in that way. You see the poor, cheap food exposed in the markets. Nothing that any of you would like to eat. The scraps and leavings of animals, the entrails of poultry, cheap grains of the leguminous sort, rice, barley, every man looking anxious and full of work. It is well to have seen that all, for once, but once is enough for one man's life.

#### JAPAN THE PROGRESSIVE.

Next, we reached Japan at Nagasaki. It is February and a little snow appears on the tops of the ever present mountain ridges, for be it known the Japanese Kingdom is made up of volcanic islands, sharp ridges rising from the edge of the water or with usually only a narrow belt of arable land. The valleys are narrow in the same way. In all Japan, with its forty millions, there are not so many acres of arable land by three millions as in one-half of Iowa. Nor is the land of surpassing fertility. It is worked with infinite toil, by manual labor. There is no room for pasturage or grain growing for beasts of burden. Only enough to sustain humanity. With no outlet, the population has multiplied and crowded until, to the most of the people, it is hard toil from the cradle to the grave with only enough extremely plain food to maintain life and strength. Fifty-five per cent. of all the farms contain less than two acres each. Thirty-five per cent more, less than three and three-fourths acres, and only five per cent. have more than four and three-fourths acres. Rigid economy, with ceaseless hard work, is the common lot of man, woman, and child.

The steamer went from Nagasaki around northward and into the famous inland sea, passing within three hours' sail of the place where Togo destroyed the Russian fleet. It is a picturesque ride of six or seven hundred miles up as far as Yokohama, with numerous towns along the shores, their buildings thickly clustered, fields tilled like gardens, and a few, a very few orchards. There is not room for large orchards. The land must be used for growing rice and vegetables to sustain the lives of the crowding millions. Lack of land is the wall of adamant against which life in Japan beats forever and cannot break. The ground is worked to the uttermost foot, and with most painstaking toil, but

there is a limit beyond which it cannot go. In all the markets I saw no fruit. It is not a land of fruits—of apples, pears, grapes, plums, and peaches. The empire of the Japan plum is in America. The chief orchard fruit seems to be the persimmon, of which you see some orchards, going down by rail to Nagasaki, as you return from the north to the south.

#### NURSERIES OF JAPAN.

It was my good fortune to have papers which recommended me to Mr. Suzuki, the largest nurseryman of Japan. He has visited America and Europe and speaks as good English as the rest of us. He was kind enough to devote much time to my business and pleasure, making both far more successful than could otherwise have been. His own nurseries, though known the world over, contain but a very few acres. The small extent is made up by the concentration of work, as it seemed to be in all the other nurseries. The chief work in Japanese nurseries is that of dwarfing trees and forcing them to grow in set forms. A tree fifty or one hundred years old, three or four feet high, may be worth one hundred dollars. I saw an old wreck of a flowering cherry tree in a certain nursery. It was said to be a century old. All of one side had died, decayed, and fallen away, but its age made its value one hundred dollars. A workman will sit, squatting on his heels, oriental fashion, from one to two or three days in front of a little evergreen, with no tool but a tiny Japanese scissors and some fibers of the cocoanut. His work is to ligate and strangle with those tiny brown fibers, each individual twig of the plant so that it may obtain from the root only enough substance to keep it barely alive. As he ties the ligature around the tiny twigs he draws them so that whatever growth they are permitted to make may be in the direction desired. Mr. Suzuki told me that he had orders from Europe for two hundred thousand of such little trees. He had not them himself but would try to gather them up from others. He took me to Tokio one morning to the famous exhibit of the skill of the best horticulturists of that region. It was entirely of such tiny plants, nobody knows how many years old, and dwarfed as above described, with infinite toil, from year to year. A tree which, naturally, would be forty feet high is grown fifty or one hundred years and remains not more than three feet high. It is all strange to an American accustomed to rate trees as fine according as they show robust health and vigor. But the Japanese certainly love trees and enter into their lives more than most of us. Every village has a shinto temple and priest. It is invariably upon the highest point, approached through an avenue of magnificent old evergreens with the temple itself in a grove of the same.

#### SOCIAL LIFE.

They live close to nature, marrying, and rearing a family as a matter of religion, and living the "simple life" carried to its utmost limit. Four out of every five women you shall see in the streets in the cities has each a baby on her back, Indian fashion—she and the baby both being bareheaded. In the winter she has probably stockings on her feet and sandals—nothing more. Inured to manual toil and plain living from infancy, the men find no additional hardships in military life. Their food is not changed. They can march and carry the burdens of a soldier with as little fatigue as they can work at manual labor at home. They have no weekly day of rest as we have, but work from the beginning of the year to the end, with only a few holidays. The Buddhist religion, which they profess, commands that they kill nothing, therefore they

mostly eat no meat. The food exposed in the markets of the cities so far as I saw, was of the very plainest description—vegetables, rice, barley, and a great variety of leguminous grains. Fish is in every market and takes the place of meat, almost entirely. It is not a land of milk and honey. There is not room for cows.

They have more sympathy with trees and plants than we have. You may see in the larger cities, plants in the offices and in the pleasure rooms of great hotels, but they are trusted in these unhealthy places for only one week at a time. Then the careful gardener recalls them and places others there. Here we try to maintain greenhouse plants for many weeks and months in places utterly unfitted for them and wonder why they droop and sicken.

#### FRUITS TO BE STUDIED BY AMERICANS.

They have studied out a way to treat their persimmons as we never have, so that the fruit, when first taken from the tree is cured, as they call it. In from five to ten days the astringency is all removed and the fruit in all its lusciousness is ready for use. They take empty casks in which has been stored saki, their rice beer. As soon as the liquor has been removed, they fill them with the fresh fruit, put in the head, air tight, and wait results. In a few days, according to the weather and the judgment of the expert, the lid is removed and the fruit tasted. If found not yet cured, the lid is quickly returned and a few more days suffered to elapse. Then the fruit, while yet firm, may be shipped and placed upon the market.

It seems to me that the only fruit which we can profitably import from Japan at present is the best varieties of their persimmons. In the region of Peking, China, they have varieties of persimmons of sorts said to be even better than any found in Japan, extra large, of very fine quality and almost without seeds. Those of us who live south of latitude thirty-five may well become interested in these. Scions and trees may be had through the American Legation or the American Agricultural Station at Tungehou, not far away. The name and address given me for correspondence of those interested was: Prof. Tewkesbury, American Board Mission, Tungehou, China.

The great difficulty in obtaining trees and plants out of China is that the people are unable to pack them properly for shipment, but by asking for trees or scions in December, as soon as the foliage has fallen, and having them packed as well as possible in China, then sending them to Yokohama, care Yokohama Nursery Company, for repacking and reshipment, one might succeed very well, but it is imperative that the shipment be made from Yokohama to Seattle or Vancouver instead of to San Francisco by way of Honolulu. The northern route saves the heating which is certain to occur in the ship's hold in the tropics, and so saves the life of the shipment. From the northern port the stock might be sent down the coast by freight to destination in mid-winter without undue risk. Our southern members need the Chinese Leitchee from Canton, persimmons from near Peking and the best persimmons out of Japan. What else we may profitably take out of the Orient I leave for others.

No other pleasure trip for rest or renewing one's hold upon life can be compared with a long, leisurely voyage through the tropics in winter. I heard one old man say, "If I could be assured of the joys of heaven forever, I should be willing to agree to spend some of the time on a voyage like this." It seems like a pleasant dream which we would like to have all over again.

## II. THE RELIGIOUS ELEMENT IN THE LIFE OF THE HORTICULTURIST.

BY CHAS. W. GARFIELD, GRAND RAPIDS, MICH.

In the life and purposes and ambitions and associations of the horticulturist, as affecting his character, there are three leading points of view. First, the commercial, which is largely personal, and is illustrated in the transactions of horticultural societies everywhere. A new fruit is originated, and the discussions concerning it have to do with its importance as a factor in making a commercial success of fruit growing. A new carnation is brought out and its value to the originator is measured by what it will bring. The handling of help, the selection of implements, the choosing of proper soil for special purposes, all connect themselves immediately with the financial results which satisfy the commercial and financial ambitions of somebody. This view permeates every department of work in connection with what is denominated "commercial horticulture" and even in such organizations as our own, which is supposed to be rather scientific in its character, and having for its objects results which are not centered in commercial transactions, this idea creeps in and occupies a very large place in the deliberations of the Society. In the horticultural work of the world this is an important point of view, and I would not minimize its value in the least.

There is another view which appeals more strongly to me and that is the altruistic view, which considers in connection with any forward movement or successful venture, the general good. A new fruit that is originated is a step of progress of value to all the people. A successful method that is adopted in connection with the horticultural pursuits is of general value to the world. A combination of science and art that brings prominently to the front a horticultural resultant which a keen satisfaction, finds its fruition in the wide reach which it attains in affecting mankind. In the evolution of the horticulturist himself who brings to his occupation the most helpful suggestions, one finds his permanent reputation based upon his accomplishments for his fellow men.

The third view is the religious one, which treats the methods and results in their relationship to Divine law as connected with the mind of the Creator. In these later years this view has appealed to me more strongly than formerly, and it is a matter of surprise that in a hasty review of the transactions of horticultural organizations it has occupied so small a fraction of the deliberations. In treating of this attitude, I do not wish to induct anything of cant, but wish to recognize the peculiar element in the character of man which distinguishes him from all other life, and that is the concept which recognizes his relation to God.

There are many different phases of religion that do not apply particularly to the horticulturist and still need to be considered in connection with this general subject, because there is no intelligent and progressive horticulturist who does not espouse in some way the cause of some phase of religion. Many men adopt a certain form of religion and identify themselves with religious organizations and affect certain religious formalities having largely in view personal ends, that is attached to what is commonly called "getting on in the world." In the same way many join horticultural societies, for the sake of putting themselves in position to make more money or to get more notoriety or to secure a larger following. Even with this end in view, the religious man has made

some gain through associations of this character. He must be better for connecting himself with good movements.

There are others who attach their religious belief almost entirely to matters connected with the next world. Everything which they say they believe, or which they try to do in a religious way, has for its far-reaching object the attainment of eternal happiness in the world to come. The religious activities of such persons are entirely distinct from the details of their every day occupations. This object has resulted in the making of better men and women, preventing crime, and has accomplished a great deal in its way for the betterment of mankind.

There are other people who attach their religious longings to, and secure their religious satisfactions in connection with certain observances on, Sunday in the church and in connection with their interpretations of Biblical instruction. All this is valuable. The proper respect for the Sabbath and active work in connection with a religious organization, and a wholesome recognition of the truths of the Bible, are factors which have far-reaching influence in moulding men toward better things.

But the phase of religion which appeals to me as one most particularly adapted to the life of the horticulturist, and one which is broader than any sectarianism, is the recognition of all truth as a holy emanation from God, which treats of all the facts connected with life and law as manifestations of a Creator and the intrinsic element of all religious manifestations. This kind of religion is as much at home in the field as in the cathedral. It is as far-reaching and influential on one day of the week as on another. It is as true as the Bible and as authoritative. It fits into every activity of life and attaches itself to every purpose and every method. It lifts every occupation out of drudgery and brings light and promise into every undertaking. The religious horticulturist in the broadest sense may or may not be a church-goer. He may or he may not have formulated any statement of his religious aspirations; he will recognize in every branch of his occupation and in every result of his handiwork, God's methods and God's laws. He will daily, as he looks out upon this world, say to himself "This is God's world." This tree, that flower, the fruits of the orchard, the grain of the fields, the life that permeates every nook and corner, are to him revelations of God. Success in any direction means accord with God's law. Failure means a misunderstanding of Nature's methods and an acknowledgment of a lack of comprehension of the inexorable laws of God. This religious horticulturist, from the time he steps into his field of activity in the morning until he finishes his working day and lies down in his bed at night, has constantly before his mind the feeling that he is acquiring knowledge of God. He may not have studied the latest edition of the lexicon to secure a proper definition of religion in his own mind, but having this habit of thought, he comprehends the laws of life and movement. In his failures he thanks God for the punishment which surely follows an infraction of the law, recognizes in it the method of the Almighty to carry to his children the wonderful truths which uplift and contribute to their betterment and happiness. The horticulturist whose life is pervaded by this religious thought, is serving God continually. He does not need to study up some particular way of rendering service because he sees the opportunity on every hand. His anxiety is connected with his own limitations.

In connection with experimentation and observation, the religious instinct is a necessity. The successful experimenter must be a religious man because he is dealing with the things that are close to the Creative Power. If he has

the proper conception of his work, he must be a lover of God and of his fellow men: first, a lover of God as expressed in his delight at finding out the great truths connected with his occupation; and second, a lover of his fellow men because of his opportunity to carry these truths into processes that shall be of benefit to mankind.

The commandment of God which has the most significance as related to horticultural experimentation, is the one which commands us not to bear false witness. This, in some interpretations of the commandment, seems an easy thing to do, but to some of us who have caught ourselves in so great anxiety to have certain results follow certain activities, that we have actually falsely interpreted observations, we can understand that it is not easy to keep even this one commandment. The man who shuts himself up within four walls and studies the Bible and tries to interpret the laws of God from some knowledge that is within him, may be a truly religious man and may be a valued factor in the promotion of the cause of religion, but his field of action and his opportunities are narrow and limited as compared with the arena in which the horticulturist finds himself placed in the ordinary pursuits of his occupation.

My appeal is, that in the prosecution of methods which aim at success in the occupation of horticulture, while not forgetful of the commercial, or the altruistic points of view, we shall have as a leading and masterful thought, the intimate relationship which our successful efforts have to the interpretation of God's laws and their application to the details of the profession which we have chosen.

“Love—sunshine—all things bright,  
 Are curtains which Thy mercy draws  
 To Shield us from that light.  
 I falter when I try to seek  
 The world which these conceal,  
 I stammer when I fain would speak  
 The reverence that I feel.  
 I dare not pray to Thee to give  
 That heaven which shall appear.  
 My cry is Help me, Thou, to live  
 Within the heaven that's here.”

(Mr. Goodman in the chair.)

The Chairman: I am sorry that the President of the Missouri Horticultural Society, Professor J. C. Whitten of Columbia, is not here, and I am sorry you cannot meet him and know him as we know him, to respect and admire him. In his place, then, I am to be chairman of this meeting, simply for the purpose of carrying out this program. These historical papers, giving a consideration of the historical growth of the horticulture of each state, began at the Boston meeting, and there were presented a number on the horticultural history of the different states: now we will have presented a number of states west of the Missouri, and at another meeting another group will be taken, and in the course of three or five years we will have a history of every state in the Union, and these I hope will be collected and published in book form.

## III. HISTORY OF HORTICULTURE IN KANSAS.

William H. Barnes, Secretary of the Kansas State Horticulture Society.

Horticulture in Kansas began in the far distant past when nature planted within her borders many varieties of fruits, nuts, flowers, edible leaves, stalks, barks, roots, and fungi.

Geographers, scientists and other residents of the East, either through ignorance or prejudice, named Kansas and her sister-state-neighbors, the "Great American Desert," although nature for centuries had been lavishing the luscious charms of horticulture profusely over much of this same "desert." Many a West-bound emigrant was so impressed by these "bugaboo" stories that he actually feared that future comforts, much more future luxuries, must fail his family. But the American is curious and inquisitive, and cannot be kept from experimenting; so where he found wild grapes he believed that domestic varieties would succeed; where he found wild strawberries, wild plums, wild currants, gooseberries, roses, and even orchids, he felt sure the fine, improved and domesticated varieties of these fruits would grow if introduced.

Before the white man came with his improvements this section of the globe, now so lovingly called Kansas, bore the following horticultural products, some of them in numerous varieties: Tree plums, sand or bush plums, yellow and black currants, cherries, black and red haws, crab apples, persimmons, paw-paws, strawberries, raspberries, blackberries, gooseberries, dewberries, hullberries, elderberries, mulberries, serviceberries, fox grapes, summer grapes, river grapes, downy grapes, May apples, and prickly pears, besides, walnuts, hickory nuts, pecan nuts, hazel-nuts, burr oak acorns, and chestnut acorns, ground nuts and yonkopsins. There were also poppy mallow roots, Indian bread roots, bush morning glory tubers, nut grass roots, artichokes, and other edible roots; also slippery elm and sassafras barks, peppermint, sorrel, watercress, cowslips, yams, onions, beans, peas, ground plums, ground cherries, cacti and edible fungi. . . . The Spanish explorers in 1541, the French in 1724, and General Pike in 1806, each referred with satisfaction, surprise, and pleasure to the plentiful fruits of Kansas.

The Indians subsisted largely upon these fruits, as did also hunters, trappers, and early settlers. The earliest recorded apple tree planting was that by Rev. Thomas Johnson, near Shawneetown, Johnson County, in 1827. The variety was Newtown Pippin. Pear trees were also planted by him, at the same place, in 1836, and as far as known, are still to be seen. During the fifties several practical horticulturists settled in the State, notably Dr. Joseph Stayman, Dr. Housley, Dr. William Tanner, Fred Wellhouse, and others. These had faith in the horticultural future of the State and spent money, labor, and time to test it. They quickly became satisfied that the northeastern portion of the state was a fine fruit country, that the soil and climate were just right. They found that apple, pear, peach, plum, cherry, and other useful trees grew well, if planted and cared for, and that grapes and berries grew and bore well, even when neglected after planting. They also found the sweet potato and the peanut were at home in Kansas soil. In fact, so easily did grape cuttings and vines grow, and so prolific were they, that they were planted in profusion everywhere.

This continued up to the passage of the prohibitory law, when many, who like Noah of old valued the grape only for its fermented juice, reduced their



vineyards, or dug them up. Grapes do not need to be made into wine to be appreciated, for if well grown, they are the best of all table fruits. Culinary vegetables, edible roots, and choice flowering shrubs did equally well; and Kansas was changed from the "Great American Desert" to the "Great American Garden."

Among the drawbacks was, first, this old cognomen, and the "bugaboo" stories that "Kansas was not a fruit country," that you could not grow trees or fruit here. Then the wildcat nurserymen come in great numbers, with wagon-loads of high-priced but worthless trees, many of them the "riff-raff" and refuse of Eastern nurseries, labeled with the names of the old-time home favorites that made the settler and his wife shed tears thinking of boyhood and girlhood in the old home orchard; varieties dear to the heart; and fond remembrance opened wide the pocketbook and the coin was not only willingly, but even happily, exchanged for future "hope." Few knew what should be planted in the new home and the experiment was a "willing sacrifice." The tree peddler was the great sage on whom they relied; and he could always find—on the other side of the wagon, with a handy pencil and label—just what was called for. Many of these trees were already dead; more were in bad (fatally bad) order; after being hauled long distances they were often planted in sod, or hurriedly prepared ground; such as lived and finally bore fruit were in hundreds of cases an utter disappointment, being not only untrue to the label, but also entirely worthless.

Such discouragements caused some to give up and join the ranks of those who said "this is no fruit country."

Later, those who prepared their ground well, and ordered trees of reputable nurserymen, and planted carefully, cultivated thoroughly, and kept live stock away, soon found that this was not only a fruit country, but one of the *best* of fruit countries. These successful men generously went about telling others "how it was done," and by their experience and example others were enabled and encouraged to plant again more largely. For many years the eastern, especially the northeastern, counties, were believed to be the only ones adapted to growing the apple; and apples from Leavenworth County took premiums wherever exhibited.

1874 and 1875 were grasshopper years, yet in 1876 at the Centennial Exhibition in Philadelphia, Kansas surprised the world with her apple exhibit, which caused a great immigration to the state.

As all the energetic, progressive horticulturists could not live in the northeastern part of the State, they kept on experimenting and planting farther west and southwest, until *now* the valley of the Arkansas for 240 or more miles west bids fair to be the greatest apple producing section in the world. Of large orchardists, Judge Fred Wellhouse was the pioneer, and his 1637 acres of apple trees are famed the world over. By his experience all have profited; he never had a secret, never told a lie—but once—and it was to be expected that the younger generation would take his advice and "go him one or more better," so there are numerous orchards in the State now of from 100 to 2000 acres each.

#### HORTICULTURAL ORGANIZATIONS.

Organization was soon found to be desirable, and on December 15, 1869, the Kansas State Horticultural Society was incorporated, being then called the Kansas Pomological Society. The first President was William Tanner, of Leavenworth. The first appropriation received from the State was for \$500.00

for the purpose of making an exhibit of Kansas fruit at the thirteenth session of this, the American Pomological Society, at Philadelphia, in September, 1870, at which meeting Kansas received a Wilder Silver Medal. A second appropriation of \$1000 for general purposes was made two years later; since which time the State has regularly made an appropriation for general expenses of the society.

About the time of organization of the State Society there were several local societies organized, notably the Missouri Valley, and the Leavenworth County, also several district societies, each comprising several counties, and the State became very active horticulturally; then came another and more reputable crowd of nursery agents, who displayed *Kansas* fruits, in jars, in pictures, and in models, and were richly rewarded; as every farmer and his wife were determined to have fruit at the earliest moment. Kaw Valley potatoes are sent all over the country, 1200 car loads in the first two weeks of potato harvest, Kansas tomatoes are better and 200 per cent. more productive than the famous Baltimore, Maryland, product. Kansas strawberries are sent North in car loads. Two famous raspberries, the Kansas and the Cardinal, originated at Lawrence, Kansas. George C. Brackett of Lawrence was then secretary of the State Horticultural Society, and during his administration of twenty-six years the horticulturists of the State were kept well informed through correspondence, and the carefully and elaborately prepared reports issued from the office. During several years of that time he was the honored secretary of *this*, the American Pomological Society, also.

In 1895 a new administration came in and the society removed its headquarters from Secretary Brackett's home at Lawrence, to the State Capitol at Topeka. Here provision had been made for it by the assignment of an unfinished, windowless and doorless 12x12 room.

At the twenty-eighth annual meeting held in Ft. Scott, Kansas, December 12, 1904, Judge Fred. Wellhouse was chosen President and Hon. Edwin Taylor Secretary; and a temporary office was opened at the State Capitol in a corner of the office of the Commissioner of Labor Statistics. Mr. Taylor could not serve personally so he chose the present secretary as his deputy for two years, giving him full control.

During the year 1896, the little room spoken of above, that was set aside by the legislature, for the society, was finished and by the tact and favor of the state architect, Mr. Holland, and the courtesy of the executive council, two other small adjoining rooms were added making a suite of three rooms. These the society soon outgrew, as it gathered pictures, books periodicals, and fruit, and new rooms, its present quarters, were assigned to it. These rooms and their furnishings are the pride of the horticulturists of the state. First there is a large room 53x30 feet with sixteen foot ceiling, and four large east windows. This is furnished with elegant book cases; several show cases for insects and fruit models; tables of fruit in jars and fresh in season, desks for president, secretary, and assistant secretary; typewriter, electric light, electric fan, etc. The walls are covered with framed diplomas and portraits of eminent horticulturists. A private office adjoining, 10x24 feet, with three large windows, contains storage cases, another desk for secretary, a telephone, etc. A toilet room 10x10 supplied with coat hooks, lavatory, etc., and a fireproof vault 8x8 supplied with shelves, comprise the suite. The floors are covered with costly brussels carpets, and all finishing is in quartered oak. The large room is annually rearranged and supplied with seats for the annual meetings, when it holds 300 people comfortably. The Society has issued twenty-seven regular

reports, some annuals, some biennials, according to the whims of the legislature.

It also issued several specials, a fruit manual, an insect report, and several forestry reports, under former administration; and a work each on the apple, the peach, the plum, the cherry, and the grape, during the present administration.

Kansas fruits have competed successfully at many places; among premiums taken are the following:

- 1869.—Gold Medal, Pennsylvania Horticultural Society, Philadelphia, Penn.
- 1871.—Diploma, Virginia Horticultural Society, Richmond, Va.
- 1871.—Diploma, American Institute, New York.
- 1871.—Wilder Silver Medal, American Pomological Society.
- 1872.—Diploma, American Institute Fair, New York.
- 1873.—Silver Medal, Massachusetts Horticultural Society, Boston, Mass.
- 1873.—Diploma and Silver Medal, New Jersey State Fair, Waverly, N. J.
- 1873.—Diploma, American Institute, New York.
- 1876.—Diploma, Centennial Exposition, Philadelphia, Penn.
- 1885.—Diploma to Allen County, Cotton Fair, New Orleans, La.
- 1893.—Medal and Diploma, Columbia Exposition, Chicago, Ills.
- 1898.—Silver Medal and Diploma, Trans-Mississippi Exposition, Omaha.
- 1900.—Three Gold Medals, Paris Exposition, Paris
- 1901.—A Wilder Silver Medal, from the American Pomological Society.
- 1901.—1 Silver, 3 Bronze Medals, Pan-American Exposition, Buffalo, N. Y.
- 1904.—Numerous Medals at Louisiana Purchase Exposition, St. Louis, Mo.

There are about forty local auxiliary Horticulture Societies in the State. By act of the Legislature the secretary has for the past two years (*viz.*, 1904-1905) taken up, through the assessors and county clerks, complete statistics of horticulture in the State. This has more than doubled the work of the secretary. These statistics for 1905 show that we have in our State to-day 240,000 acres devoted to fruit trees, as follows:

ORCHARD FRUITS		SMALL FRUITS AND VEGETABLES	
Apple trees .....	9,086,713		Acres.
Pear trees .....	425,129	Vineyards .....	8,543
Peach trees .....	6,191,347	Strawberries .....	4,876
Plum trees .....	919,385	Raspberries .....	2,009
Cherry trees .....	1,090,831	Blackberries .....	6,164
Quince trees .....	18,873	Gooseberries .....	733
Apricot trees .....	238,684	Vegetable gardens .....	29,069
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Total fruit bearing trees.	17,970,967		

Thus has the young and progressive State of Kansas evolved from the "Great American Desert" to the "Wonderful American Garden."

#### IV. FRUIT GROWING IN NEBRASKA—AN HISTORICAL SKETCH

R. A. Emerson, Lincoln.

The first trees planted in Nebraska were apples, set, it is said, in 1853. During the '50's a number of orchards were set in southeast Nebraska, but rarely did they contain more than a few trees. It was in the late '50's and early '60's before any commercial orchards were planted. These would now hardly be considered of commercial size, consisting as they did of only an

acre or two. The early orchardists of Nebraska had many difficulties to contend with. There were no railroads, so trees had to be brought in by team, or even on horseback. The trees were of course high priced. Moreover, nothing was known concerning the adaptability of varieties. Of course many costly mistakes were made in trying to grow the varieties which succeeded in the old home back East. A naturally trying climate, an occasional late freeze, even grasshoppers—all these things and more had to be overcome. But then, this statement with some minor variations would pass fairly well for the history of pioneer effort in almost any region. Notwithstanding these obstacles, the early orchards became well known throughout a large territory still farther west, for the wagonloads of apples sent out from them. Indeed it was not later than '71 that Nebraska apples took prizes at Richmond, Va., opening the eyes of Easterners who had until then never thought of Nebraska as a fruit growing state. In the early '70's apple orchards of considerable size were planted. These proved very productive and fruit of any kind sold readily at a good price. There were few destructive insects or diseases. Apple growing in eastern Nebraska naturally came to be looked upon as a very profitable undertaking. Planting was increased largely. Conditions remained much the same until through the '80's, and commercial apple planting was kept up until well into the '90's, when it received a serious check.

If we seek for the causes of this decline in commercial apple growing in eastern Nebraska, we shall not have to look far. Trees had received comparatively little care and yet had produced well. But trees grow old some time. On our rich soils a neglected tree may often outyield a well-treated one when young, but just so surely it will grow old more quickly. Root and trunk diseases had gained entrance in some cases, probably years before, but these things developed slowly and are not apt to be discovered quickly in neglected orchards. As the fruit industry grew older, insects and diseases of the fruit increased rapidly and new ones came on. Much of the fruit produced was poor in quality. Poor fruit made poor prices. In short, conditions had changed markedly. During the prosperous years, men had gone into apple growing who were entirely unfitted for it. They could not adapt themselves to the changed conditions. In some cases, men who would otherwise have succeeded had gone into apples too extensively. They suddenly found themselves in a condition where they could hope for no paying crop until their orchards could be renovated, and this they could not afford until they got a paying crop. As a result of all this, many orchardists became discouraged. Commercial planting practically stopped ten years ago. Some orchards even have been grubbed out. Nevertheless Nebraska has many profitable apple orchards, orchards that are not only profitable now but have been from the beginning.

The peach story is much the same, only shorter. The first commercial planting in southern Nebraska was in the early '80's. Few of the varieties first planted are grown now. Cold winters have been perhaps the most serious drawback, but, with the hardy varieties we now have, peaches are a comparatively reliable crop throughout the southern part of the State and are by no means unknown in parts of north Nebraska. Family orchards are being planted largely, and are giving satisfactory results, and yet few commercial orchards have been set during the past few years. This check to commercial planting has not come about so much through lack of productiveness, new diseases, insects, cold winters, and the like, as through financial losses due to inability to dispose of the fruit produced. Discrimination in freight rates was no doubt responsible in part for this, but lots of fruit rotted on the ground simply be-

cause the men who grew it—mostly general farmers and stock raisers, who had planted small orchards as a side venture—were not trained in the commercial side of peach growing. Too many trees ripening fruit at one season caused a glut in local markets, and the fruit in some cases was so inferior through lack of proper pruning, thinning, cultivation, etc., that it would not pay the expense of shipment. The men who understood their business thoroughly grew heavy crops of fruit and the fruit did not rot on the ground. Nevertheless the experiences of the careless growers have very naturally tended to discourage commercial planting.

Commercial orcharding under irrigation in west Nebraska is yet too young to have judgment passed upon it. The first planting was in the early '90's. During that decade a considerable number of commercial orchards, mostly of apple, plum, and cherry, were established. At present almost nothing in this line is being attempted. It is not that orcharding under irrigation has proved unprofitable. Men are simply waiting to see what will result from the planting already made.

Now all this may at first seem like a "hard luck" story. But there is no excuse for such a pessimistic view of the situation on the part of any Nebraskan. Although few commercial orchards are being established, home fruit growing is decidedly on the increase. Home orchards and fruit gardens are being planted everywhere. Southeastern Nebraska is naturally fairly well stocked in this line already. As a matter of fact, the southeastern one-fourth of the State contains three-fourths of all the fruit trees enumerated by the State Bureau of Statistics. Home planting is extending north rapidly. The northeast one-fourth of the State now claims nearly one-fourth of the fruit trees, and if peaches were left out of the reckoning would show to even better advantage. Though the western half of Nebraska now has only about four per cent. of the fruit trees in the State, home orchards are springing up all over central and western Nebraska. Even in the new sections the farmers have been unusually prosperous during the past few years. And with the general farmer after all, orchard planting depends much more upon profitable crops of corn and wheat than upon profitable crops of fruit. Moreover, the "crazy" horticulturists who planted fruit some years ago in these newer sections of the state, where everybody knew that fruit positively could not be grown, have actually gone ahead—such was the perverseness of their nature—and produced fruit. The ever-present prophet of evil has been gradually shoved across the State until soon the last of his kind will have been pushed over the line into Dakota and Wyoming. Even the less optimistic among us are now made to see that fruit for home use can be grown on every farm in the state. This does not mean that fruit can be produced profitably everywhere in Nebraska, but Nebraska has certainly reached the stage where there is no longer any good excuse for being without fruit, whether the location is east or west, north or south.

Not only is home fruit growing just now in a particularly promising condition in Nebraska, but there is no need of concern, even over commercial fruit growing in many parts of the State. It is true, as has been said before, that few commercial orchards are now being planted anywhere in Nebraska. The causes of this have been noted. As a matter of fact, eastern Nebraska has reached a stage in commercial fruit growing which probably comes sooner or later in almost any region. The time when the general farmer can plant an orchard, give it no care, produce good crops of fruit, and sell them at a good price, has passed. Commercial fruit growing is profitable now where made a

business, just as it was in the early period of fruit growing. The conditions, however, are very different now. To be successful the fruit grower must now give his orchards the same careful attention that is given any other crop. He must be prepared to fight numerous insects and diseases, just as fruit growers in older regions have to. The present tendency in Nebraska is for the general farmer to give up commercial fruit growing, leaving this to the specialist who can and will give it the proper attention. In some lines, commercial planting is being extended rapidly even at present. This is notably true of small fruits in eastern Nebraska. Among orchard fruits, pears are being planted now much more extensively than ever before. Even with small fruits, however, the stage of development is being reached where planting must either be increased considerably or decreased. The local markets are becoming overstocked and yet the industry is not large enough as yet to secure economical shipping facilities. There is a large part of the State to the west and north which will not produce fruit enough for its own consumption for many years. The commercial growers farther east should find a profitable market here. To repeat, let me say again that there is nothing but encouragement for the commercial fruit grower in Nebraska who will give his business strict attention, and no other kind of fruit grower will succeed in any fruit growing region.

What has been said of home fruit growing will apply equally well to the ornamental planting of home grounds. Our farmers are paying more attention to their home grounds than ever before.

The nursery business is so closely connected with horticulture that a word should be said about its growth in Nebraska. While the propagation of fruit and forest trees was begun soon after the first orchards were planted, and carried on in a small way during the '60's, it was not until the early '70's that nursery work assumed any great importance. The activity in orchard planting during the '70's and '80's was naturally reflected in the nursery business. It was during this period also that the timber claim law was in force. This created an enormous demand for forest tree seedlings and helped materially to build up the nursery business in the state. With the repeal of this law and the great advance in value of farm land, comparatively little planting is being attempted at present, so that the production of forest tree seedlings no longer holds the place in nursery work that it once had. The decline in commercial fruit planting has been more than offset by the increase in the planting of fruits and ornamentals for home use, so that the volume of the local nursery business is greater now than ever before. The most noticeable recent increase in nursery work, however, is the growing of trees for shipment outside of the state. This is a business that has grown up in the past ten years. At present, it is safe to say, over half of the nursery stock produced in Nebraska is shipped out of the state. If the comparison had to do with apple trees and apple seedlings alone the percentage of stock shipped out of the state would be even higher. In the production of apple seedlings Nebraska ranks second. There is no doubt that our soil and climate are as well adapted to the production of all kinds of fruit trees and hardy ornamental plants as those of any state in the Union.

This paper should not be closed without some reference to the work of the Nebraska State Horticultural Society in building up the fruit interests of the state. The Society was organized in 1869 and the first competitive fruit exhibit was held in '71. From that time on, regular meetings and exhibits have been held. Separate reports of the Society have been published since 1884. Since then the reports have grown in size and value. Not a small part of the

work of the Society has been its division of the state into fruit districts and the recommendation of varieties of fruits for each of the various districts. Until recently, the state has been divided into nine districts. During the present year the fruit districts have been increased to nineteen. The recommendations are based upon the personal experience of members of the Society residing in the various districts, and are indeed a very reliable guide for the prospective planter in all parts of the state. There are many other ways through which the Society has helped to build up Nebraska horticulture, not the least important of which has been its efforts to represent the State with creditable fruit displays at the various expositions of this and other countries.

## V. HISTORY OF THE FRUIT INDUSTRY OF ARKANSAS

J. B. LAWTON, BENTONVILLE

The first permanent settlement of Arkansas was in the central and southern part of the state, and, while horticultural interests, no doubt, received some attention, the political building of the new state was the early concern of the leading spirits, and the farmer busied himself mainly with his home building and the crops that would make food for his family and his team.

The large planter found cotton a profitable crop. Most of the state, and especially the Ozark elevation of northwest Arkansas, was settled by people from Tennessee. They were a good class of people and firm believers that man should not live by cornbread alone, but should be cheered by peaches and comforted with apples.

The plateau land on the summit of the Ozark range was soon found to be well adapted to apples and fruits that flourish in latitudes a little farther north. It is easier to find when nurseries were planted to sell trees to those who planted small orchards, than to be exact as to the first planting of a family orchard.

Cane Hill, in Washington County, seems to have been a garden of Eden where fruit plantings were very successful. J. B. Russell, of Cane Hill, had a small nursery of apple trees in 1835. His daughter, Mrs. Craig of Bentonville, can remember playing in her father's nursery at about this date, and to her clear memory I am much indebted for this early history. A little after this date Mr. Isaac Shammon originated an apple of great excellence that Mr. Russell propagated and named the Shannon Pippin. This apple stands for good quality, good size, and is deservedly popular wherever known.

The State was admitted into the Union in 1836 and some orchards had been planted and were bearing fruit then, but the commercial nursery was the index that pointed to a demand for more fruit trees.

John E. Davidson established a small nursery a little west of Bentonville, in Benton county, in 1836, and John Breathwaite, close to Bentonville, planted seedling apples about 1843; and in 1844, 400 of these were grafted and sold, and part of them Mr. Braithwaite planted without grafting. One of these seedlings was the Arkansas Black, which is a popular apple over the southwest.

Mr. Joseph Dickson, father of J. S. and E. H. Dickson, planted an apple orchard close to Bentonville in 1836. Near Holmes' store, south of Bentonville, is an orchard 79 years old and some of the trees are yet thrifty and in bearing condition. In the Ozark country apple trees do not grow so large or live so long as they do in the states farther north and east, but they commence business at an early age and stick to their trade as long as they live.

Oliver Young was an early nurseryman when the apples of Benton and Washington Counties were hauled to Texas and the Indian Territory in wagons, and spread our reputation far and wide.

In 1881 the southern branch of the Frisco Railroad was completed through Benton and Washington Counties and the day of small nurseries and small orchards was over. Other railroads came later and with increased means of transportation, the Ozark region, both in Missouri and Arkansas, at once came into prominence as a fruit section.

At the census of 1900 Benton County had 1,613,766 apple trees, being more than any other country in the United States. Washington County had nearly as many trees and was second in that respect in the United States.

Under normal conditions either county will produce annually between two and three million bushels of apples. Formerly the wind-falls and culls were of but little use, but now evaporators are as thick as schoolhouses over the country. A great distillery and numerous cider and vinegar factories, jelly and apple butter factories, are in active operation, and all of every apple may be utilized. Cold storage facilities greatly benefit the fruit grower and are an aid to the transportation companies who now ship apples all winter and until the strawberry claims the right of way.

I have mentioned Benton and Washington Counties, because they were earliest in the field, but all of northwest Arkansas, where the altitude and latitude insures the necessary cool temperature at ripening time is in the Ozark apple belt. Most of the state is favorably situated for peaches, pears, plums, cherries, and especially\* strawberries, raspberries, blackberries, and grapes. Where fruit is used freely on every table there is less demand for alcoholic stimulants and temperance and morality prevail. In an "early day" our apples scarcely knew of the codling moth. Canker worm and fungus did not apply to the orchards, but with the marvelous increase of fruit came our enemies. The fair smooth apple of the olden time seemed doomed, but before 1890 the spray pump came to the rescue, and Paris green, blue vitriol, and other things that call for skull and cross-bones, are familiar names to us and to a considerable extent protect our fruit.

A history of the apple interests of the Ozark country that did not mention the Ben Davis would be incomplete. The Ben Davis has several promising seedlings, among which is the Gano, almost identical with it in bearing qualities, ability to stand shipping and last, but not least, the bright red color that makes them famous. Ben Davis and his family have been excommunicated for heresies in quality; they have been picked a month too early, but when given a fair chance in their chosen home in the Ozarks, they come to the front and stay there.

For the home orchard we want variety, but for a commercial orchard a half dozen kinds will bring the best results.

The strawberry is first in the spring and first in the hearts of our countrymen, and should have received earlier mention. In 1876 the Iron Mountain Railroad had been completed through Arkansas, and the Land Commissioner, Colonel Thos. Essex, aided old Judge Murrell of Austin, Lonoke County, Ark., to try the shipment of a few boxes of strawberries to St. Louis. This was the first shipment of strawberries, and its profitable results spread along the Iron Mountain route, especially at Austin, Beebe, and Judsonia. In about 1881 there were considerable plantations at Altus and Van Buren and on the completion of the Frisco road, they spread up onto the Ozarks.

On these Ozarks in 1905, from Van Buren, Ark., to the southwest counties



in Missouri, one association, the Ozark Fruit Growers' Association, shipped 525 cars of strawberries to northern cities. In 1905 Arkansas has sent out of the State a car load of strawberries for each pint of berries shipped in 1876 and 1905 has not been a very good crop. I am indebted to Major S. H. Nowlin of Little Rock for the early history of the fruit interests of the central part of the state. He has been identified with it from its origin and was the first delegate from the Arkansas State Horticultural Society to the American Pomological Society, held at Rochester, N. Y., in 1880. He is the only one living of the little band who organized the Arkansas State Horticultural Society, though immediately after its organization Vestal, Tipton, Thomas, Babcock, and others became members, who still live and exert an influence for good horticulture and good citizenship. Major Nowlin was for many years president of the State Society and always active in agricultural and horticultural advancement.

Along with this advancement on horticultural lines and sometimes leading it, are experiment stations and horticultural societies. The Arkansas Agricultural Experiment Station is of great value to the farmer and stockman, as well as the horticulturist. It is beautifully located at Fayetteville, where the State University also aids in these industrial lines.

The Arkansas State Horticultural Society was organized in 1879, and a sturdy and determined band of fruit growers kept it on its feet without state aid and built it to active usefulness. The new blood infused into the State Society in the last few years, gives it new vigor and a still wider usefulness.

The Ozark elevation has a northeasterly trend, far into Missouri, and its uplift gives a similarity of fruit productions and a unity of interests that does not regard state lines.

The Missouri State Horticultural Society has at least kept pace with the state in its wonderful advancement, and Arkansas has had the privilege of identifying itself with one of the best State Horticultural Societies in any state. It is not my province to give any history of this State Horticultural Society, but its influence extends far beyond the borders of Missouri.

It will be seen the horticulture has spread in Arkansas with the construction of railroads and these railroad organizations have wisely and generously fostered horticultural interests. The transportation companies have often been justly criticized, but it has been proved beyond a reasonable doubt, that corporations have souls. By the co-operation of transportation companies, horticultural societies, experiment stations, and vigorous individual effort, still further advancement will be made and, horticulturally at least, we will have a greater Arkansas.

## VI. HISTORY OF FRUIT GROWING IN NEW MEXICO

FABIAN GARCIA, MESILLA PARK

The early history of New Mexico, I believe, is not surpassed in point of antiquity and interest by any of the states. The peculiar Pueblo and Aztec civilization found among the aborigines of the land; the antiquity of the territory under Spanish rule, for it was the first of the States to be occupied by Europeans; the Mexican independence and the Mexican rule from 1822 to 1848; the peculiar circumstance under which this land became United States territory; its exceptionally fine climate, its good grazing ranges and its fertile valleys now spotted here and there with orchards and vineyards, are few of the notable features of interest.

The histories of New Mexico give simply the political situation of the territory throughout its different periods of development; while the material growth seems to have practically escaped the eye of the historian. There is no evidence of any fruit having been grown by the Pueblos, while during the early Spanish rule we find the same condition existing in fruit growing. From 1750 to 1800 the New Mexico industries consisted largely of barter, stock raising, and some agriculture. During this period, however, the Spaniards made a beginning in growing some fruit of very inferior quality and only for home use.

From 1822 to 1845, during the Mexican rule, New Mexico agriculture started to develop more rapidly than it had done in the past. In 1823 the value of all kinds of exports, mostly to Chihuahua, is given at \$12,000, while in 1845 it amounted to \$450,000. During this period of 22 years the population had increased to 80,000 people. Yet with this increase in population and development of the country, our records are very deficient in accurate information in what was actually being done in fruit growing during this period. It is perhaps safe to conjecture, however, that as other branches of agriculture developed, fruit growing must have done the same, though not in the same proportion on account of the perishable nature of the product and the long distance to market.

In 1841 Doña Ana, a little town in the now famous Mesilla Valley, was settled, and it was followed by the settlement of Mesilla, a few years later. The Mesilla Valley, which lies in the lower portion of the Rio Grande Valley, is one of the most important fruit growing sections in the territory. Soon after these towns were settled fruit growing was started, mostly in grape growing. Most of the settlers in these towns came from Juárez, a town in Mexico on the Rio Grande, opposite El Paso, Texas, and noted even at that date for its fine grapes and wines.

Statistics from the United States census reports of 1850 and 1860 show that the value of fruit products in the territory was \$8,231 and \$19,651 respectively. When we stop to consider these figures, one cannot help but realize how little fruit there must have been grown in the territory in earlier times. Practically all of the first orchard fruits grown in the territory were seedlings, as is shown by a number of seedling apples, pears, peaches, and apricots still growing in some of the Mexican home grounds.

The only definite information in regard to the different kinds of fruits grown during the early history of the industry is that given in the *Wisconsin Union* for March, 1867, by Judge J. G. Knapp, a resident of Mesilla in the early sixties. He writes, that along the "Rio Grande in Rio Arriba and Santa Ana Counties, peaches, apricots, and apples are raised. The apricots are small and little, if any, superior to the wild plum of Wisconsin, and the apples are all of one variety, sweet and leathery." He continues: "The Bishop of Santa Fé has introduced apricots and apples from the States, which have borne in his garden at Santa Fé, and Mr. John Clark, now dead, planted apple trees from Missouri in Los Luceros, Rio Arriba county, in 1859." In 1865 Judge Knapp owned a nursery of about 2,000 trees in Mesilla. It is claimed that these were about the only trees in New Mexico at that time. Judge Knapp also writes of the grapes and vineyards in the following language: "Two kinds of grapes are grown, El Paso and the Muscatel. Both are sweet grapes. The origin of these grapes is shrouded in mystery. No trace can be found of them beyond the vineyards of El Paso, though they are evidently of Asiatic origin, and probably were produced from seeds of dried grapes from

Spain, or even farther east, planted by some of the Spanish missionaries." (In this connection, I wish to say that I have always been of the opinion that the El Paso or Mission grape, as it is now called, is a seedling of some European variety.)

During the '50's and '60's the grape was the most important and most extensively cultivated fruit along the Rio Grande valley, since this fruit could be manufactured into wine which was consumed at home and exported away.

Fruit growing did not begin to develop properly until the advent of the railroad into New Mexico, about 1880, though there had been some promising signs in this direction since about 1870.

Mesilla, a town in Doña Ana county, has always been an important fruit growing place. The first large plantation started here was planted by T. J. Bull in 1868. This plantation consisted principally of the Mission grape, some apples, peaches, and native apricots. For a number of years thereafter, Mr. Bull was known as one of the most successful grape growers in the Mesilla Valley. The wines made from his Mission grapes were always commented upon very favorably. After Mr. Bull's plantation was set out, others followed his example on a somewhat smaller scale. In 1876 Mr. Thomas Casad started one of the largest apple orchards in the Mesilla Valley, containing about 3,000 trees. Twelve years later 2,500 peach trees were added to the plantation. During the profitable period of this orchard, the fruit was shipped in carload lots to the markets of Colorado and other States. In 1889 Mr. Geo. Wood planted the famous Woodland orchard, containing about 35,000 apple and peach trees, the peach trees being planted in between the apples. A few years later Dr. J. H. Bailey, Frank Burke, G. M. Williams, F. H. White, Pearle Bailey, and others in the valley ventured into the fruit growing business.

In the Mimbres Valley, in Grant county, the first orchard was set out in 1878, by Mr. W. L. Thompson. This orchard contained about 30 acres in apples with only a few pears and peaches. This pioneer in fruit growing in this valley was soon followed by such men as Señor N. Ancheta, Geo. Perrault, Jas. Swartz, John Brokman, Shultz, Señor Torrez, and a few others. Practically all the fruit grown in this valley is apples.

In the Pecos Valley, at Roswell, in Chaves county, fruit growing started in 1880, when Mr. John Chisum planted the first orchard, containing 200 apple trees. About eight years later four or five other small orchards were set out. In 1894 Mr. Parker Earle planted the now famous 500 acre apple orchard, belonging to Mr. J. J. Hagerman. This stimulated others in planting apple orchards, so that within a short time there were 1,500 acres in apples. At present there are about 4,000 acres in Chavez county.

About 1890 Mr. Chas. Green planted a large acreage at Calsbad, then Eddy, in Eddy county, in grapes, mostly Muscats. This plantation was never a great success, principally on account of neglect. In 1895 a number of apple and peach orchards were planted. The peaches do very well in this section and peach growing is developed into quite an industry.

Santa Fé, while not the largest, is perhaps the oldest fruit growing section in New Mexico. It is reported that there are few apricot seedlings which are claimed to be over two hundred years old. One of the largest orchards in that section is the one owned by Hon. L. B. Prince, which contains about fifty acres.

At Farmington and Aztec, San Juan county, fruit growing dates back to about 1878. This section is also developing fast into a fruit growing region.

The San Juan fruit is well known throughout the territory. The orchards are small, the largest are not over 25 acres. While peaches, cherries, and pears are grown, the apple is the main crop.

Aside from the sections that have been mentioned there are others of minor importance.

While fruit growing in New Mexico has developed slowly in the past, the results of the past few years indicate that this industry is making rapid strides. The following figures taken from the different United States census reports show quite plainly the progress in this direction: The value of the fruit products for 1850, 1860, 1870, 1880, 1890, and 1900 was \$8,231, \$19,561, \$13,609, \$26,706, \$100,000, and \$231,048, respectively.

Why fruit growing developed so slowly at first has not been due to lack of natural favorable conditions, for New Mexico is rich in them. The soil is everywhere fertile enough to produce good tree and vine growth, and heavy crops. The climatic conditions throughout the fruit growing districts are, on the whole, favorable to the growth of fruit.

Since New Mexico lies in the arid belt of the United States the rainfall is insufficient for crops. Water for irrigation is the important factor for success in fruit growing. It is not infrequently found, among some of our old orchards, varieties which, though they are among the leading ones in other States, are partially or entirely worthless. The portions of the territory which are better suited to fruit growing are the river bottoms or valleys and the smaller valleys along the mountain streams. There are also large areas of the uplands commonly known as the "*mesas*," which are well adapted to fruit growing, and all that is needed for these lands to be utilized is water to be raised up to them. The largest fruit districts are the Rio Grande Valley, extending from Embudo on the north to the Texas line on the south, taking in portions of the counties of Rio Arriba, Santa Fé, Sandoval, Bernalillo, Valencia, Socorro, Sierra, and Doña Ana; the Pecos Valley, mostly in the counties of Chavez and Eddy; the Animas and San Juan Valleys in Juan county; and the Mimbres Valley in Grant county. Other, but smaller, districts are found in the counties of Colfax, Otero, Lincoln, Taos, Mora, and San Miguel. The apple is the most extensive and most profitable crop. The counties of San Juan, Rio Arriba, and Santa Fé in the north, Bernalillo and Socorro in the central, Grant, Doña Ana, and Otero in the south, and Lincoln and Chavez in the southeast, are well known for their apples.

New Mexico is beginning to be known away from home for its fruit. In 1901 at the Buffalo Exposition, the apples from Roswell received a first prize, while in 1900 the apples from New Mexico were carried across the continent to the Paris Exposition, and specimens from Doña Ana county received a second premium.

The largest commercial orchards are located in the Mimbres Valley, Mesilla Valley, San Juan and Rio Arriba districts, and at Roswell. The Roswell section is particularly noted for its large apple orchards. The largest bearing orchard is that owned by Dr. J. J. Hagerman, who, in 1902, it is reported, refused an offer of \$60,000 for the crop on the trees.

While the pear and the quince thrive well, they are not so important nor are they planted in such large areas as the apple. The pear trees are among the best drought registers, and are long lived and hardy. At present the pear is free from serious diseases. The dreaded pear blight, which is so destructive in other sections of the country, is practically unknown in New Mexico.

While peaches are grown in all the fruit growing sections in the territory, the largest peach orchards are found in the southern portion of New Mexico, and the largest of these are located in the Mesilla Valley and at Carlsbad in Eddy county. These districts are especially adapted to certain varieties of peaches. The early ripening kinds, such as the Alexander, Arkansas Traveler, Sneed, Waterloo, and Hynes' Surprise, are among the most successful and sure bearers. As a rule, the early ripening peaches are the late bloomers, while the late kinds bloom somewhat earlier and are thus subjected to the late frosts. The Elberta, though quite tender in the bloom, is gaining in popularity in the Mesilla Valley. The writer saw a few specimens of the Elberta this summer from the Stewart, and Bowman orchards, which measured from eleven to thirteen inches in circumference. The peach usually begins to bear quite early. The trees in a young peach orchard at the New Mexico Experiment Station, planted in the spring of 1902, set a heavy crop in the spring of 1904.

Apricot and cherry growing in New Mexico is of minor importance. Ordinarily the apricots bloom too early to escape all of the late spring frosts, which tend to reduce the crop very materially. The sour cherries, like the Early Richmond and others, predominate, while the sweet varieties do poorly. In the northern part of the territory the cherries do better than in the southern valleys.

While there is no extensive plum growing in the territory, this fruit is making a place for itself, as there are a number of varieties, which do admirably in all the fruit-growing sections. There is some variation as to the fruitfulness among the varieties of the different types. The Japanese plums, however, are like the apricots in their blooming period; they usually bloom too early in the spring. It has been thoroughly demonstrated by experiments conducted at the New Mexico Agricultural Experiment Station, and by practical plum growers throughout the territory, that the Japanese plums are practically worthless, owing to their liability to frost injury.

The native plums are better bearers, though some varieties bloom too early. On the other hand, the European group of plums is, in every respect, admirably adapted for growing in New Mexico. The trees are thrifty, heavy and late bloomers, and as a result of this, they are sure bearers. By proper selection of varieties of this group a succession of excellent plums can be had throughout the plum season. The French, German and Silver prunes, and the Clyman, Imperial and Transparent Gages, Jefferson, Washington, Pond's Seedling, Yellow Egg and Coe's Golden Drop are a few among the good varieties.

New Mexico produces good grapes, and the lower and warmer valleys seem to be better adapted to grape culture. The Mesilla valley, for example, is recognized as the finest grape producing section in New Mexico. The grape does so well in this valley that many of the fruit growers look ahead to the time when this section of the Rio Grande valley will be devoted almost entirely to the cultivation of the European grapes. The European grapes, or the so-called "California grapes," succeed much better than the native varieties, and these are the commercial kinds for New Mexico. At present the commercial varieties are, the Muscat of Alexandria, Mission, and, on a smaller scale, the Flame Tokay and Gros Coleman. The Mission grape, which is medium late in ripening, is a medium-sized black berry, is very sweet and pleasing in flavor, and it is the most popular variety and the one that has given New Mexico a reputation as a grape-growing section. The grape shipping season is prac-

tically from the 20th of August to the last of September. The reason for this short season is due to the lack of earlier and later ripening varieties than the Mission and Muscat Alexandria. The New Mexico Experiment Station is fast demonstrating that early, as well as late ripening varieties can be successfully grown. The Cannon Hall Muscat, Chasselas Fontainebleau, Thompson's Seedless and Muscat Precoce Du Puy de Dome are a few of the early varieties, which ripen about two weeks earlier than the Mission. While in addition to the Gros Coleman, and Flame Tokay, the Cornichon Black is giving good results. The stump method of pruning has been practiced altogether along the Rio Grande Valley.

With the exception of the pear and apple, the fruits are practically free from serious pests. The San José scale, while occasionally found on fruit trees, is not considered serious, since it is comparatively easy to keep under control. The worst pest the apple and other pomaceous fruits have, is the codling moth. But by judicious and persistent spraying, the percentage of wormy apples can be materially reduced. This has been shown by the results of spraying experiments conducted at the New Mexico Agricultural Experiment Station and published in Bulletin No. 41.

As the territory becomes more thickly settled, fruit growing is going to develop faster, and with the influx of settlers into New Mexico this industry awaits a bright future.

In those sections of New Mexico where Government aid in irrigation is being had, the fruit growing interest is increasing. This is practically the case at present in the Mesilla Valley where the Government is about to undertake the building of the Elephant Butte dam and irrigation ditches at an approximate cost of \$7,000,000.

## VII. DEVELOPMENT OF COMMERCIAL FRUIT GROWING IN TEXAS

T. V. MUNSON, DENISON

Up to the year 1876, when the writer located in Texas, no quantity of fruits worthy of mention were grown, even for local markets, much less for shipping to the larger cities. That, or the next year, a few parties at Denison, Texas began shipping a few strawberries to Kansas City, Mo., realizing \$5 to \$6 per 24-box crate, and a small area of ground (sandy soil on red clay sub-soil) yielded an enormous income in comparison with income from any farm crops. To Mr. Harrison Tone, afterward the Mayor of the city of Denison, is due the honor of making the first shipment of fruit of any kind to northern markets from Texas. This example so excited and stimulated strawberry growing at that point, that within the next three years numerous persons had engaged in the business, when strawberries were shipped from Denison by the carload while no other point was yet shipping any. These shipments went to Kansas City and other points in Missouri and Kansas over the M. K. & T. Ry., the only line of railway then extending into Texas from the north, and it was the real immediate cause of the origin of commercial fruit growing in Texas. Quickly followed, the extensive planting of early peaches,—the Alexander, Beatrice, Early Louise, Early Rivers, etc., and the first two or three crops of these were very profitable, and so over estimated the planting of such varieties that low prices and reaction in a few years caused a cessation of planting of peach trees largely.

In 1879 was organized the North Texas Horticultural Society at Denison, Texas, then, and for a number of years, the only Horticultural Society in the State. It held monthly meetings, and two annual fruit exhibitions, one called the Strawberry Meeting in May, at which small fruits were shown galore; and the other in July called the General Fruit Exhibition, at which all classes of fruits and vegetables were shown. Some years Chrysanthemum shows were held in the fall. There were more or less exhibits at every monthly meeting. That society threw much light and enthusiasm into the work and made Denison and Grayson county famous throughout Texas as the fruit region of the State.

Often visitors from other parts of the State came to our meetings and exhibitions and became interested in the work, and went home and organized local societies in their own communities. Thus in a few years after the phenomenal success of fruit growing and the North Texas Horticultural Society, The Pilot Point Horticultural Society, The Central Texas Horticultural Society at Dallas, The East Texas Horticultural Society at Tyler, came into existence before or by 1886, and more or less commercial fruit growing was under way in many communities in northeast Texas along the lines of railway then penetrating the country from the North, and the spirit of investigation and co-operation had grown so strong that a call for the organization of a State Horticultural Society was sent out in 1886 by the Central Texas Horticultural Society and delegates from all the local societies then in the State met together that year in Dallas and organized The Texas State Horticultural Society.

It was one of the fundamental principles of the State Society, though opposed by some members, that the annual meetings and exhibitions should be held at different points throughout the State, and that likewise the President should be successively chosen from different sections of the State. This plan gained the approval and support of horticulturists throughout the State and the Society steadily grew, although the State has never appropriated a cent to its aid.

Finally the Society became so large and had stimulated the organization of fruit growers and truck growers' societies in the various sections that it felt the need of some centrally located place, easily reached by rail, to annually hold its meetings. Fortunately at that good time, the State Agricultural and Mechanical College Director of Experiment Station, Prof. J. H. Connell, and the Professors of Horticulture arranged that the Society could meet at the college, get lodging at the dormitories, meals at the mess halls, at cost \$1.00 per day, and hold sessions in the college chapel. This succeeded so well that the idea was expanded to include all the agricultural organizations of the State, and the general name of Texas Farmers' Congress applied to the whole coming together. Recitation rooms were set apart in which each special organization meets in its own special sessions and a few general sessions are held in the large chapel. Prof. J. H. Connell was chosen President of the Congress at the start and has continuously been re-elected. It is to his strong powers as organizer and lecturer in the Congress, and as chief editor of *Farm and Ranch*, which journal has greatly aided the organizations, that Texas can now boast of the strongest State Farmers' Congress of any state in the Union. The Texas State Horticultural Society is the senior and strongest member of the Congress. Other members are The Texas Cotton Growers' Association; The Texas Cattlemen's Association; Texas Dairymen's Association; Texas Swinebreeders' Association; Texas Beemen's Association; Texas Poultry Association; Texas Truckers' Association; Texas Nurserymen's Association; Farmer Boys and Girls' League; and others, with room for more.

This arrangement gives the State Horticultural Society great opportunity

for pushing horticultural interests among other classes of agriculturists. Attendance has steadily increased from a few hundred at first, until at the last congress fully two thousand from all parts of the state were present and the limit of lodging and mess-hall facilities were reached.

While the organizations were a great aid in educating the fruit growers up to a high ideal in producing and marketing their products, yet the development of commercial orcharding and trucking in any region came always and only with railway facilities to the great northern cities, and the railways have done a noble work in creating favoring conditions for transportation and sale of products, and as the fruits of combined co-operation, Texas now annually pours thousand of carloads of the finest of fruits, vegetables and melons into the northern markets from Denver to Duluth, Buffalo and New York.

The revival of extensive planting of peach orchards in Texas came with the introduction of the Elberta, Mamie Ross, Carman, Superb and other very sure fruiting, large, handsome, and good shipping varieties of the North Chinese strain, bred mostly from the Chinese Cling crossed with Crawford in the Elberta, and with Old Mixon Free and Cling and Mountain Rose in such as Family Favorite, Carman, etc.

Quite extensive planting of plums came with the demonstration that out of the numerous varieties introduced from Japan and native or hybrid Texans, some ten or twelve are quite sure very abundant fruiterers, good shippers and very marketable, and escaping curculio and rot sufficiently to make them quite profitable. The following list includes the best: Funk, Milton, Red June, Abundance, Gonzales, America, Whitaker, Burbank, Normand, Chabot, Wickson, and Ward October Red, named in the order of ripening.

Likewise commercial plantings of strawberries, blackberries, raspberries, grapes, apples, pears, persimmons and pecans, have been greatly stimulated by the origination and introduction of successful, profitable varieties. At no period has there been more numerous or more intelligent effort to produce superior market varieties than at present.

To tersely summarize: As organized educational and commercial effort, the production of better commercial varieties, and the building of railway lines have progressed, so has the development of commercial fruit growing grown up to its large proportions in Texas, yet it is still in its infancy, and should either of the three great works just mentioned be suspended it would go into speedy decline.

## VIII. THE LEADING FACTS IN THE DEVELOPMENT OF THE FRUIT INDUSTRY IN MISSOURI.

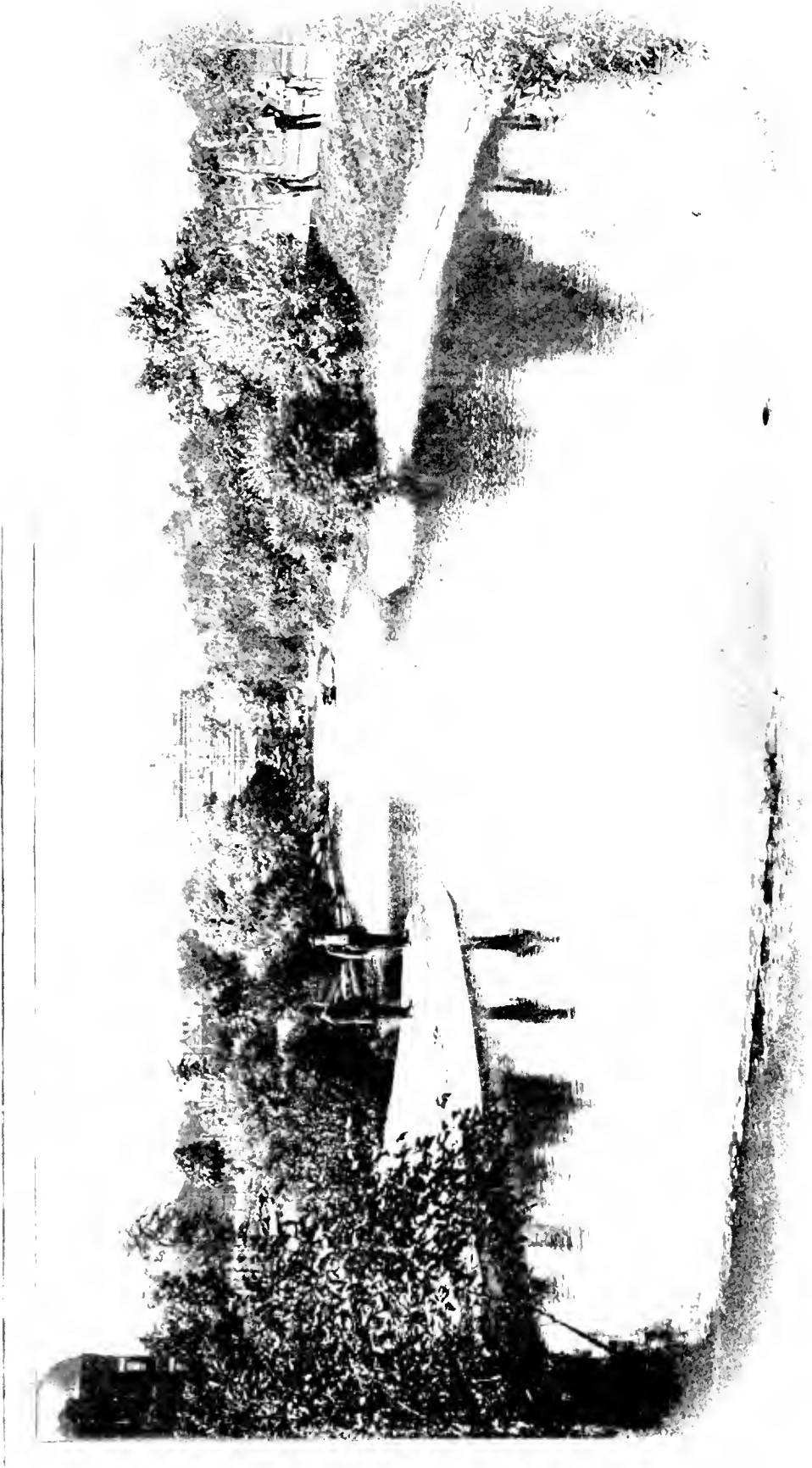
BY C. H. DUTCHER, WARRENSBURG, MO.

In 1541, the first white man set foot on Missouri soil. At this early day, the Spanish came from the South seeking wealth. The French in 1763 came from the North seeking to plant the Cross among the Indian tribes. In 1812, Missouri was admitted as a Territory and in 1821, as a State, the 13th, after the 13 original colonies, the 24th in rank, but to-day, the 5th in population and wealth, the 2nd in *quantity* of apples, but 1st in quality; thus completely knocking out the old familiar legend of the "unlucky 13." What are some of the causes for this wondrous change, more wondrous because of its rapidity, is the question now before us.

Among the natural causes we note: First, our Geographical Location. Missouri extends from the 36th to a little beyond the 40th degree of North latitude;







PASEO LAKE.

lies between the 90th and 95th parallel of West longitude, and is about half way between the two axes of our continent—the Rockies on the west and the Alleghanies on the east. One can hardly go from the East to the West, or from the South to the North and back again, without passing through or near our borders. The Great River on the whole length of our eastern border, and the Missouri through our center, have always facilitated immigration to the State, and the transportation of our surplus products from the State.

Second: Geologically we have all of which others can boast. Way back in the dark unknown, when the Labradorean triangle marked out the shape of the unborn continent of North America, Iron and Shepard Mountains, in the southeastern portion of the state, stood as far-off islands, rearing their bald peaks above the great hot sea that completely covered the White Mountains, and washed the lifeless shores of the Adirondacks. Hence, in the evolution of the continent, Missouri became the proud possessor of all the formations from the Achæan rocks of the ancient seas through the Silurian, Devonian, and Carboniferous ages. But our distance from the axes of the continent gave us only semi-mountainous regions; but enough for most excellent water and air drainage.

Third: As to soil, we stand among the best and the proudest. We have lake bottoms, rich loamy river deposits, the Loess of the glacial formations, and the red-clay-porous shale of the Ozark uplift. River and lake deposits afford good fruit land for certain seasons; but for every day, the best fruit soil in the whole world is the Loess formation along our river bluffs, and the red soils of the Ozarks are but little inferior, if indeed any.

Fourth: Our climate partakes of all the good things of our location; for we are not only half way between the Rockies and the Alleghanies, but also half way from the equator to the northern extremity of North America. Please bear in mind that weather is not climate. "Weather is the condition of the atmosphere at any time and place with respect chiefly to its temperature, humidity, clearness or cloudiness, rain, fog, or snow and wind." It is capricious, and constantly reminds us that only the unexpected happens. "Climate is the average annual succession of weather in any locality." Its most important factors in regard to agriculture and hygiene are: "The mean annual temperature and rainfall, and the distribution of temperature, rainfall and sunshine throughout the year." Now, we are too far north to be seriously affected by the storms peculiar to the more tropical latitudes, and too far south to get the polar current in its direct return to warmer regions, but only as it comes to us deflected by the western mountains. Yea, even the tornadoes that so frequently start from the arid plains to the south and west of us, seldom touch us on their way to the northeast. Missouri is an ideal place in which to live, and no one ever moves away but he gets homesick and wants to return, no matter whether he steals a horse and goes to Texas, or back to Indiana to see his wife's people."

Among the artificial causes we mention only two, Men and their Work. In 1735—some say 1755—St. Genevieve was settled by the French. Before the close of the 17th century, they had planted pears, grapes and a few apples. St. Louis was settled in 1765, and as the district included all the territory between the Merrimac and the Missouri rivers, the French continued their settlements up the south bank of the Missouri, and were not long in reaching Herman, and even the place where Booneville now stands. These hills early became noted for their vineyards, and the vintage cellars, for their wine.

Soon after the transfer of the Louisiana purchase, a third stream of im-

migration set in from Virginia and North Carolina. At an earlier day these States had settled what is now Kentucky and Tennessee, when they were known only as "the territory beyond the mountains." These immigrants, therefore, gathered up their own sons and daughters as they came west and north. In fact as early as 1803, the majority of the inhabitants of Missouri were of English speaking ancestry. This population was essentially agricultural and settled, for the most part on detached farms, or little hamlets, leaving the cities, then few in number, to the original founders, the French and other foreigners. From this third class came the real founders of our commonwealth, and among them, we must look for the real beginnings of the fruit, as well as all other agricultural industries. These immigrants came to the Missouri river hills where they found an abundance of wood and water, and a friendly soil; and here is found our oldest orchards.

The earliest mention of an orchard, I find in any of these counties, is in a petition for a grant of land in St. Charles county, way back in the days of "land grants." The petitioner said "he had become impressed with the fact that the people were suffering for the want of peach brandy, and he wanted some land on which to raise a peach orchard and make brandy." The land he obtained was all prairie land, and afterward he asked for "some timber land so that he could get wood to run his distillery."

#### NATIVE FRUITS

These early settlers found a land rich in all wild fruits. Crab apples, plums, wild cherries, grapes and all kinds of berries adapted to this latitude, abounded. I have read of one wild grape vine that yielded a 1000 pounds of grapes; but never saw it. To improve these wild varieties, or to supplant them with the more delicious fruits of the older States, soon became a problem. We may not have had a "Johny Apple Seed" riding leisurely through the country, distributing apple seeds and peach pits from his saddle-bags, but I am sure we had a seed-wallet and saddle-bag era in this development. The good housewife had brought seeds, few in number but of various kinds, from the old home; and when a few square rods had been cleared up, these were planted. Vegetables and grains for their more immediate use were thus obtained, and seedling peach and apple trees started. The soil was so fertile that these young trees produced sprouts in abundance, and these, in turn, were carefully split off, or dug up, and set out again. Within the memory of men not yet 80 years old, this was the only way, in their boyhood days, of increasing the size of their orchards. From these early trees, I myself have eaten the best apples I have yet tasted. But they were not large or red or golden yellow, such as we heard our parents talk about.

#### THE SEEDLING ERA

What were we to do? The saddle-bags were again brought into use. Often in answer to invitations to come west, or upon the return of some fortunate member of the community from a trip back to the old home, their saddle-bags yielded up a good supply of scions and buds from some favorite trees. A little practice enabled them to graft and bud, and in due time the children were amazed to see sweet apples and sour, red apples and pale yellow apples growing on the same tree.

In those days the orchards contained only seedling trees. At Versailles, Col. Evans told us of a seedling orchard in his county, Clay, just north of Kansas City, set out about 1835. When these were five or six years old, they were grafted with scions brought from Kentucky in saddlebags on horseback

He said that many of these trees were yet healthy, vigorous, bearing good crops, and show plainly where they were grafted five feet above ground. In 1849 Mr. L. D. VotEAU of St. Louis county set out an orchard of 150 trees.

In many sections, this work led to the establishment of local or neighborhood nurseries. Still people planted for family use. Everywhere the necessity for a large supply of nursery stock was felt. People sent East and were often disappointed. The long distance from the nursery, length of time required in transportation, and the difference in climate conditions made it very difficult to make trees grow. Soon the tree-peddler stepped to the front, loaded with refuse stock from Eastern nurseries, bearing any label you might call for, and contributed largely to the confusion and disappointment.

#### THE ESTABLISHMENT OF NURSERIES

Since the State was settled from the eastern border toward the west, we would naturally look for our first nurseries in the eastern counties. I know not when the first one was established, but I am informed that in 1825, Judge James Stark left Bourbon county, Kentucky with his old-fashioned saddle-bags well filled with scions, and coming to Pike county, Missouri, started a nursery that has lived for 80 years, under the fostering care of sons, grandsons and great grandsons, until today it is the largest nursery plant in the world.

One, Col. Geo. S. Park, established a nursery at Parkville, in the early 40's. This was the pioneer nursery for Western Missouri and Kansas. A Mr. Mock established one in Johnson county about 1850. These two are the oldest nurseries I have found in our Central Western counties. Family orchards began to increase in size and number. By 1859 enough interest in fruit growing had been developed, largely through Col. Colman's *Missouri Valley Farmer*, the predecessor of *Colman's Rural World*, to organize a Fruit Growers' Association. The name was changed three years later to Missouri State Horticultural Society. They organized in January, held a call meeting in September, and their first annual meeting in December of that same year, 1859.

#### PIONEERS

In September, 1860, a call meeting was held at Herman, and their exhibition apples were still seedlings. The 1861 meeting was held in St. Louis. Grapes and wine were largely in the ascendancy. Their committee reported that they had examined 31 different samples of wine; and Sect'y Muir stated, "The wines were then freely partaken of by the audience at large with feelings of evident satisfaction." This was in St. Louis and it is still hard to hold the lid down in that city. Still an interesting discussion on many small fruits and the quince, followed, and winter apples received some attention. But at the next meeting, the apple came decidedly to the front. Their early grafts and many varieties from Eastern nurseries were now bearing. A large number were on exhibition with no little confusion as to names. The Society was now becoming a power in the land. It could hardly have been otherwise with such men as Norman J. Colman, G. W. Swallow, J. L. Minor, George Husman, Jacob Rommel, C. W. Spalding, William Muir, F. R. Elliot, Dr. Clagett, Isidor Bush, Jacob Madinger, Herman Jaeger, L. D. Morse, W. C. Flagg, H. T. Mudd, to lead, to direct, to talk, to write, to lecture and to work.

In the early part of this decade, soon after the organization of the State Society, the development of the fruit industry in a commercial way, began. The apple and the peach were now forging their way to the front. The war was on in full force. Yet, from the record of 1865, we learn that ours was the only State Society organized to promote any of the interests belonging to the

great family of agriculture, which had been able to maintain its organization and annual convention in spite of the war.

#### COMMERCIAL ERA

The year 1866 opened up an important period. The war was over and our brethren found themselves confronted with new and momentous questions. Mr. Peabody, Mr. Guye, Mr. Murtfeldt, Col. J. C. Evans, Col. Geo. Park, Jacob Madinger, Mr. William Stark, son of the Judge James Stark already mentioned, were now prominent in our work. This year a session of this Association, the American Pomological Society, was held in St. Louis. Some of you may remember it. Possibly at no time before or since could you have come and given more needed encouragement than then. Commercial orchards had received but little attention. Mr. Goodman came to the State in 1867, and says he found only two, and both of them were limited. One owned by Messrs. Park, Evans and Judge Storm was near St. Joseph. Here too, Jacob Madinger had the largest vineyard, and August Horning owned the largest one near Westport. Orchard extension began to receive much attention now. The disappointment in the plantings from Eastern nurseries turned attention to home nurseries. The ones we had began to thrive, and new ones were founded. In 1868 the New Haven nursery, at New Haven, Mo., was started. In the same year, Mr. Blair founded his nursery at Les Summit, 24 miles east of this city. This was soon followed by the Bayliss, Butterfield, and Graves nurseries. Soon trees were sent by the wagonload into Northwest Arkansas, Texas, Kansas, Indian Territory, and New Mexico. Still the progress was slow. The people were generally poor, and our Society had no means except from a small annual fee, individual assessments, and voluntary contributions.

#### ORGANIZATIONS

But in 1871, the State made a small appropriation; in 1873 it was discontinued. In 1882, however, we had money for the first time to do with, for in 1881 the Legislature made a liberal appropriation of \$2500.00, and has kept it up ever since. Work now began in earnest. True, Col. Colman had retired, and many already mentioned had been called to their reward. But Mr. Evans remained, and Goodman, Murray, Gano, the late lamented Samuel Miller and A. Nelson, and many others had come on to take their places.

Mr. Goodman was elected Secretary in 1883, and 22 years afterward, we find him occupying the same position. He sent circular blanks to post-masters, county officers and school teachers. From these, he obtained the names of many men, and women too, who had even a small orchard. Correspondence and advertising were now greatly increased. The next year, 1884, we held our first Summer meeting at Springfield, Mo., and from that time till now, two meetings have been held each year. To date, we have visited over 500 different localities, and told the people of better things than they knew. Through us more than a thousand men of experience in fruit growing have sent their articles of information into every school district in the State, and "into the regions beyond." Our circulars, personal letters, and special reports by the mailbag full, and over 100,000 volumes of our annual reports have gone into every northern and eastern state, resulting in a large influx of fruit growers to buy our lands, and of fruit men to purchase our fruits.

#### ORCHARD EXTENSION

Early in the '80's, Southwest Missouri, along the slopes of the Ozark uplift, began to show large possibilities in fruit growing. About 1880, the people com-

menced planting commercial orchards, and their increase for the last 25 years, exclusive of the last three, has been a hundred-fold. Their nursery output shows a corresponding increase. Today in this section fully 100,000 trees are planted in commercial orchards, 7,000 acres, in commercial strawberries, and during the last three years, those people have planted fully 15,000 cherries for commercial purposes.

Early too, in this same decade, the Southeastern slope of the Ozarks began to attract attention. The Olden Fruit Company was established in 1883, and their holdings are yet the wonder and admiration of the natives. The peach industry further south and east, along the line of the old Memphis and Gulf Railroad, now the Frisco, is simply immense. The subject is too great for me. We hope to show it to you in a few days.

#### EXHIBITIONS

The decade from '80 to '90 has another interesting chapter. A work was then inaugurated that brought thousands to the State. In 1880, in connection with the Missouri Valley Horticultural Society, we began a long series of fruit displays. In two years, we exhibited once in St. Louis, twice in Lawrence, Kansas, twice in Kansas City, and captured in all \$900.00. In 1883, we were in New Orleans, and brought away \$495.00; and by 1886 we had taken awards at Cincinnati, Rochester, Boston, Grand Rapids, Philadelphia, and Columbus. In 1888, we were again in St. Louis, in 1893 in Chicago. Then followed Paris and Amsterdam. In '94 and '95, in St. Louis, in '98 at Omaha, followed by Buffalo and Charleston; in fact everywhere except in Russia and Japan, we came down to the World's Fair in St. Louis, in 1904,—almost the New Jerusalem let down from above.

The awards and premiums together with our liberal legislation, caused 1891 to mark the beginning of our *financial* prosperity; and our growth from 1892 to 1900 was more than phenomenal. There is legendary and mythological evidence that in 1800, there were two nurseries in Missouri. By 1850, we had some 32, and in 1895, more than 400. In 1857 there was no such thing as commercial fruit growing in our State, and a few thousand barrels of apples told the story. But in 1897 North Missouri alone produced 2½ million barrels, Central Missouri, 3½, and South Missouri, 3 millions. We stood at the head of the list!

#### YIELDS OF TO-DAY

In the same year, North Missouri produced ½ million bushels of peaches; Central Missouri, 1 million, and South Missouri, 2 million. We stood second in peaches—California being first.

The apple crop was worth 12 million dollars; peach crop, 3½; pears, cherries, plums and grapes, 1½; and the berry crop 2½ million; making fully 20 million dollars. This makes from \$60.00 to \$200.00 per acre, and paid the entire cost of the orchard, and in some cases, for the entire farm as well. In '98 the crop was almost a failure, still we made an exhibit at Omaha. The extreme cold of February '99 killed the entire crop for that year.

Only a half decade remains, and the story is soon told. In 1900, our orchards had not recovered from the cold of '99, and the crop was short; but in 1901, Missouri produced from 10 to 20 million dollars worth of fruit, and occupied first place in *quality*, and only *second*, in quantity. Strawberries made from \$300.00 to \$1200.00 per acre, and apple orchards sold from \$50.00 to \$300.00 per acre for the fruit. Cold rains at time of pollenization, and the frosts of April and May, in 1902-3-4 and 5 were too much for the very

promising crops of each of these years. But this was *weather*—not climate. As a State, then, gentlemen, you find us short on large crops. But the cycle will end, and we shall again forge to the front. Our orchards are well cared for, and fruit buds are abundant. A little scarred we may be, but still on the list for future honors.

We trust we shall obtain your approbation, yea, your admiration. But there will be no occasion for surprise when you consider our *location*, our *geologic formation*, our *soil* and *climate*; the character of the *men* and *women* that redeemed our State from the wilderness, their early determination to have health giving fruit for themselves and their children at any cost; the timely organization of the State Society, her achievements in missionary and educational work through her frequent meetings, her publications, and her successful exhibitions; *all* of which *made* a liberal legislature, not only in her appropriations for our support, but in the establishment of schools of horticulture, and fruit experiment stations. Are you outstripping us? Do you expect to so continue? "If you get there before we do, tell them we are coming too."

## IX.. THE DEVELOPMENT OF THE FRUIT GROWING INDUSTRY OF OKLAHOMA.

J. B. THOBURN, GUTHRIE.

The story of the development of the fruit growing industry of Oklahoma, which has sometimes been called "a land without a yesterday," ought not to be a long one for the reason that sixteen years is scarcely a span in the measurement of the life of a commonwealth. The first land was opened to settlement on the 22d day of April, 1889, a date so late in the season that nothing could be planted in the way of trees, vines or bushes. The successive opening of additional lands and reservations in 1891-92-93-95 and 1901, have so augmented the original area that, with the exception of a portion of the semi-arid sections of Beaver county, it is practically all occupied and utilized. Only three of the smaller Indian reservations remain unopened to white settlement, and the lands of these are largely leased and farmed.

Having been settled, as it were, in a day every farmer and fruit grower had, perforce, to be a pioneer and an experimenter in all matters pertaining to the selection of varieties and methods of planting, pruning and culture. It is true that, at several of the Indian agencies, schools and mission stations, there had been some attempt in the way of orchard and small fruit plantations. With few exceptions, however, there had been but little if any discriminating judgment manifested in attention to details, for the reason that the planter seldom had any personal interest in the ultimate outcome of his efforts. Hence, beyond affording proof in a general way, that the climate and soil were adapted to the growth of certain species of fruit trees, vines and bushes, even with indifferent culture, such experimental plantations presented but little in the way of definite details and facts for the guidance of the settlers who were to come later.

The indigenous flora of Oklahoma includes over twenty species of edible fruits besides several species of nuts. The list includes a number of species each of plums and grapes, besides blackberries, dewberries, raspberries, strawberries, gooseberries, currants, crab apples and persimmons. Several of these species have such a pronounced tendency to variation and produce fruit of such quality and quantity as to be well worthy of consideration and efforts at experimental developments under cultural conditions by skilled pomologists.

The first orchards were planted by the settlers in Oklahoma in 1890 and



1891. None of these were planted on a commercial scale, however. Nearly all of the fruit trees thus planted were shipped in from neighboring states. As there was no attempt at legal regulation or supervision of the sale of nursery stock, Oklahoma was regarded as the legitimate dumping ground for long stock, cull stock, diseased stock, and in fact, everything in the line of nursery stock, whether named, misnamed or unnamed, which could not be sold indiscriminately or with impunity elsewhere, a condition which, unfortunately, was allowed to continue until within a few months. The tree scalper or independent dealer who claimed to represent some distant nursery with a high sounding name, whose real and sole stock in trade was a plate book and an unlimited amount of unmitigated gall, could sally forth and work his old, yet, ever new, confidence game upon the unsuspecting farmers and then fill his orders with re-labelled job-lot culls regardless of variety.

Early in 1893, Mr. F. A. Waugh, then a recent graduate of the Kansas Agricultural College, was elected to the chair of horticulture in the Oklahoma Agricultural and Mechanical College, at that time a new institution. Gifted, as he was, with a versatility that is the portion of but few men, Professor Waugh instantly recognized the wonderful opportunities which Oklahoma presented in the way of horticultural development, and he immediately set to work to arouse a more general interest in the subject of fruit growing throughout the settled portions of the Territory. It was largely through his efforts, aided by a few kindred spirits, that the first organization of the Oklahoma Horticultural Society was effected a few months later. But there was sometimes more politics than public spirit in Oklahoma in those days, and so it followed that the competent man who had push and purpose was thrust aside for one whose sole claim to distinction lay in the fact that he had a pull with the politicians. Ten years have passed since the perpetration of that inexcusable, not to say idiotic, blunder in the public policy of the commonwealth, and while it is indeed true that no man is indispensable in any position, yet the fact remains that Oklahoma and its Agricultural College and Experiment Station still miss Professor Waugh. During the past five years, the horticultural industry has made some rapid strides in the way of development, but it is not too much to say that the effect of that ill-timed action is even yet apparent. It would be difficult if not, indeed, impossible to place even an approximate estimate as to the extent of the real loss sustained by the Territory by the departure of Professor Waugh at such a time and under such circumstances.

The possibilities of Oklahoma's horticultural resources need to be advertised before they can be fully appreciated or practically developed. Less than five years ago Oklahoma Elberta peaches had to be wrapped in paper duly labeled "California," before they could be sold in quantity on the big markets of the north and east. Since then, as results of judicious advertising, they have found a ready demand on their own merits. They have not only been successfully placed on many of the leading markets of our own country, but also some of those of Great Britain as well. Oklahoma is annually paying hundreds of thousands of dollars of commercial tribute to older communities because of the lack of proper development of her horticultural resources. Haphazard methods and in different efforts will not solve the problems which are presented, however. The field is one that is replete with the invitation of opportunity but it calls for originality and industry and perseverance of the very highest order. The beaten path of what has already been demonstrated elsewhere, does not call so loudly for experimentation here as does the necessity for the development of improved varieties of native fruits and of new varieties of exotic or introduced

species which are better adapted to local conditions than are those which are commonly planted in some of the older settled communities.

Several years ago it was the privilege of this writer to attend an interstate fruit show, at which five of the states of the Pacific Slope were competing for a prize—a mammoth silver trophy. As the one who dwelt in the land of Oklahoma gazed upon those great bunches of luscious European grapes of many varieties, or as he beheld the large, meaty, sugary plums and prunes, also of European origin, and was reminded that none of these were for him and his people because of the rots and blights and moulds and fungus diseases which attack and destroy these fruits when planted in this climate, he was fain to wish that he, too, might live in that enchanted land beyond the crest of the continent. But his sense of loyalty soon brought to mind the fact that there are in Oklahoma probably three times as many indigenous species of both grapes and plums as there are on the whole continent of Europe so that he could well exclaim: Let the dwellers of the reclaimed deserts of the west have the fruits of Europe—they have not much of their own to develop—we have a great work of our own to do. It is told of one of the oldest, and, in his way, most respected, residents of Oklahoma, Quanah Parker, chief of the Comanche tribe of Indians, that, many years ago, he visited one of the leading towns of Northern Texas, where for the first time, he was shown the workings of an artificial ice machine. Quanah was interested. His curiosity was manifested by a close inspection of details which lasted until his braves were tired and after he went away with them he returned again to marvel at the works of the wizard white man. When he went home to the reservation, his people gathered about him and asked:

“What white man do now?”

And Quanah made answer:

“White man smart! White man very smart! White man heap smart! White man smarter than God. God made ice in winter, white man make ice in summer.”

The creator of the Universe “who holds the winds of winter in His fists,” wisely placed some limitations upon nature and yet He also gave man dominion over many of these limitations. Who shall say, then, that, in seeking to overcome some of these limitations and thus endeavoring to create a pomology of their own, the fruit growers of this great midland region may not ultimately find these very difficulties to have been a blessing in disguise—a blessing not only to themselves and their people, but to the great wide world of horticulture and pomology as well.

Oklahoma lands have all been occupied but they have not all been utilized, nor can they be utilized until a denser population shall bring with it an era of smaller land holdings and more intensive systems of culture. The limit of profitable occupation of the land under purely pastoral conditions was reached by the ranchmen even before the permanent settlement of the country. A much denser population has been supported and infinitely more wealth has been produced by a more or less loosely conducted system of general farming. But even this is only a step in the logical development of agricultural industry. The ascent from aboriginal savagery to the highest type of civilization is but a succession of such steps—from huntsman to herdsman, from herdsman to husbandman and from husbandman to the tree planter and the vine dresser, is indeed a long call, yet Oklahoma has witnessed the passing or coming of each of these stages within the short space of a single generation. Can you ask more of her?

Oklahoma brings a message of progress and asks leave to report again.

## AN AMENDMENT TO THE CONSTITUTION

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Col. Watrous: I want a moment for a matter of important business. The constitution of the American Pomological Society for a long time has served well, but it needs now one amendment. It has appeared in the course of years that a great many educational institutions and libraries have desired to become life members in order to obtain the valuable reports of this Society, and there is no provision whereby they can properly do that. They have been doing it in a roundabout way by taking memberships in the name of some persons, generally their horticultural professors in the case of colleges, and those professors are changing and there is no way to change the name. Now it is proposed to add an article to our constitution. Article 3 provides that, "The Society shall consist of delegates, etc." There is no provision whereby educational institutions and anybody not natural persons in the legal term may become members, so we propose to add another section, there are only five sections, very short:

ART. 6: Libraries and educational institutions may become life members upon payment of twenty dollars, such memberships shall be limited to thirty years.

Mr. President, I move you that this additional article to cover this need be adopted by this Society this evening.

Seconded by Mr. Earle.

Mr. Burton: Would it not be well to include fruit growing companies, and horticultural societies.

Capt. Watrous: Horticultural Societies are educational institutions of the first degree.

The Chairman: That covers it.

Mr. Burton: Would it not be well to include fruit growing companies, a statement of who shall represent such society or association?

Capt. Watrous: I think that would not be proper in an article to the constitution. Such things might be covered by the by-law, that is to say, it shall consist of any delegates appointed by agricultural, horticultural and kindred societies. Now, they appoint whatever person they choose, now they appoint one man this year and one man next year, but the membership should remain.

Motion to adopt was then put to vote and carried.

(Amendment entered under Article 6.)

## THURSDAY MORNING SESSION.

September 21, 1905.

The meeting was called to order by Chairman Watrous at 9.30 a. m.

## ELECTION OF OFFICERS.

The Chairman: The report of the conference of Vice-Presidents upon the list of executive officers for the Society for the ensuing biennial period is now called for, and the Secretary will come forward and make that report.

Mr. N. E. Hansen, of South Dakota, on behalf of the committee, presented the following report: For President, L. A. Goodman, of Mo.; First Vice-President, T. V. Munson, of Texas; Secretary, John Craig, Ithaca, N. Y.; Treasurer, L. R. Taft, Lansing, Mich.

The Chairman: Now, gentlemen, how will you dispose of this report? Will you vote upon it as a whole, or will you divide and take separate votes upon the different ones?

Mr. Earle: I move that the report be received and adopted as a whole.

The motion was seconded by Mr. St. John and carried.

The Chairman: President Goodman is invited to come forward and meet his constituents.

Mr. Goodman: Mr. Chairman, I want to know in the first place who has been the traitor in the camp. The members of our delegation were authorized to do a certain thing in the election of president and under no circumstances to deviate from these orders. Not that I do not appreciate this honor; the honor of being among the leaders and working in the horticultural societies of the United States, for this has been an ambition of my life, it has been a part of the love of my life, and I have spent years of faithful application to this work because I am in love with it. In our state work it has always been the happiest part of my life, and all the troubles and worries of business cares have disappeared when it comes to the real work of the horticultural society; but to be the president of the American Pomological Society was beyond my desires or ambition I might say, because I thought there were others that were more experienced, older in the field and better entitled to it because of the labors they have done. I want to say to you honestly and truly now, that it was the desire of myself, and I supposed when I left, of our delegation, probably the largest delegation of any of the states when we met this morning, that Mr. T. V. Munson should be our selection for president and they were authorized to so hold, and I thought they were strong enough to carry the thing through. Notwithstanding all this, I must say to you that I do thank you from the bottom of my heart for this expression of your kindness and good-will. (Applause.)

Mr. Munson being called for, said:

Mr. Munson: I want to say that I think the vice-presidents never did a wiser thing than they did in electing Mr. Goodman as president of the Society, and I also thank those who voted for me. I take that as a most excellent compliment, but they have put the right man in the right place. I thank you heartily.

The Chairman: We want to call the roll of states, and the states will respond with the name of the vice-presidents.

See list of vice-presidents at pages vii, viii.

The Chairman: Gentlemen, if you are in favor of confirming this list of vice-presidents as reported, you will say "Aye."

Carried unanimously.

Mr. Holsinger: A misapprehension has gone out in regard to the first meeting that we held here, and at least two persons have spoken to me since coming to the hall that an old friend of mine, Ben Davis, has been attacked. It was stated in the *Star*, that this Society had sat down on the Ben Davis; I was present at that meeting and I heard no member of the Society at that meeting say anything against that old friend, but the *Kansas City Star* has said something, and I want to know whether this Society is going to defend my old friend, Ben Davis.

The Chairman: The Chair, being an old man and having experience with newspapers, has come to the decision long ago that the man who has no newspaper of his own and takes up a quarrel with the man who has a newspaper, is in very bad business. Let that matter pass. We do not run a newspaper.

#### NATIONAL COUNCIL OF HORTICULTURE.

Mr. Taft: At a meeting in St. Louis last fall, a Council of Horticulture was organized, and a few weeks ago at Chicago, a committee consisting of Professor Irish, Mr. Bassett of Michigan and myself were asked to present the case to this Society and ask for your co-operation, and I would like to have Professor Irish explain, if you can give a minute to it, the objects of this Council.

Mr. Irish: I come before you in the broadest sense of horticulture. I have been a member of the Pomological Society for a number of years, and I realize the great work that is being done, but at the World's Fair last summer there were some branches of horticulture that were not as well represented as they should have been. That led to a discussion between the chief of the department of horticulture and agriculture and Dr. Trelease of the Missouri Botanical, and Mr. Vaughan, I think, of Chicago, as to the advisability of uniting—perhaps I should not say uniting, but organizing a committee which might be called the National Council of Horticulture, which should be made up of representatives from different societies of the country, that is, a representative from the Pomological Society, from the Florists' Societies, from the Vegetable Gardening Societies, so as to include all branches of horticulture, so that horticulture in its broadest sense might be advanced, as pomology is being advanced by the American Pomological Society. At this meeting at St. Louis, one of the matters that was brought up was that of disseminating accurate horticultural information. We get accurate pomological information in the reports of the American Pomological Society; we get accurate floricultural information through many of the floricultural journals, but in the newspapers, through the Associated Press we do not always get accurate horticultural information. Now, there is a demand for that very thing. A short time ago the editor of one of the leading newspapers of St. Louis told me that there was greater demand today for horticultural information than there was for any other type of information that they published. Now, if there could be a committee who were authorized to prepare information and present it to the Associated Press, it would reach the people that our horticultural journals do not reach; it would get among the thousands of people who do not take horticultural journals, and if it had the stamp of a national committee, which it has been proposed to call the National Horticultural Council, that stamp of approval, along with this report published in the newspapers of the country would have great weight in dis-

seminating accurate horticultural information. I do not know what more I could add that would emphasize the purposes of this committee.

The Chairman: Have you any definite proposition to submit here; any motion you want to submit?

Mr. Irish: We were requested to ask the various national organizations to become a part of this Council by selecting two delegates who would represent the Council as representatives from this organization; that is, it is proposed that two delegates from the American Pomological Society, two from the Society of American Florists; two from the National Apple Growers' Congress, and so on down through the list of national societies, consider the questions which may come up. There is another object, I might say, that is the weight that a society would have, outside of the dissemination of horticultural information; if there are any problems that come up, if there is a central organization back of that undertaking, it would have more weight than any single organization, and that opinion was strongly endorsed at St. Louis and Chicago. It is not our purpose to organize a new society, it is simply a committee which is called the National Council of Horticulture to do a particular piece of work. That work may enlarge, there may be other matters come up as we go along.

The Chairman: If you have any definite proposition, cannot you gentlemen get together and reduce it to writing, and then we will have something to talk to and vote upon.

Mr. Irish: I would move that a committee be appointed to consider the matter and be authorized to act or to meet with the Council.

Mr. Burton: The gentleman here did not present anything to us, only the appointing of a national horticultural committee; he did not say what he wanted them to do. Are you going to have this committee take action whether my mode of cultivating an orchard is proper or not, or whether this man's mode of spraying up here in Nebraska is correct or not, or what is it? Are you going to vote on the Ben Davis? We would like to know something about what it is they are going to take up and offer to the world. I am not ready to vote to appoint unless you have something definite to offer.

The Secretary: I would like to say that I have to support the remarks of Mr. Burton in that there seems to be a lack of definiteness about the purpose of this organization. I believe in organization of fruit growers and farmers, and organization for the advancement of the fruit interests, but I cannot see at the present moment that we need another Society. It seems to me that the American Pomological Society can spread its wings pretty nearly over the whole field, and if there is interest and desire on the part of the members to do so, that we can cover the very ground that is rather indefinitely suggested. I must say, by the report of this committee, and we ought to proceed rather carefully. If it is a matter of nomenclature, it comes directly within the province of this Society; if it is grading and inspection of fruit, we have already taken that up; if it is the promulgation of horticultural doctrine, that is what the Society has done for half a century, that is what it hopes to do in the future, so, with the lack of more light, more definite knowledge on this subject, I feel like saying, let us wait until we know exactly what is wanted of us. If we go in now, we go in as promoters of this new organization. Do we want to take that position?

Mr. Marshall: I do not think that we should, as a pomological society, promote, or help promote a society which will be over us, and in which we are to have a representation. For that reason I would not vote favorably to it.

Mr. Taft: As I understand the motion, it provides for a committee to consider. It seems to me a committee can sit down in half an hour and formulate some plan of action and then we can take definite action on the matter. I would like to have this thing carefully talked over by a committee of three or five, for final action.

Mr. Green: Here is an organization of which I happen to be a member. I was appointed a member of that committee, and we were appointed to consider this thing and to have some action taken by parties. We got together at St. Louis; I told the folks I could not see just what the object of the Council was, but I said, "It is mighty good society, and if you think I can add anything to it, I would like to meet." Now, I was not able to meet with them last July, but I do not think that that class of men would do anything to destroy the authority of this Pomological Society. They are strong men, and men that make for the up-building of horticulture, and if they have an idea and have put their time into it, it is no more than just then for you gentlemen here to appoint a committee to consider that kind of thing. We do not ask you to endorse it, but to appoint a committee to consider it and see what there is in it, and I would ask you respectfully to do that, as a matter of justice, and not turn it down in this cold, forbidding way.

The Chairman: Now, you that favor the adoption of the resolution by Mr. Irish, stand and be counted. It is carried and the committee will be appointed.

Mr. Holsinger offered a resolution in regard to the Ben Davis apple, which, on motion of Mr. Green, was referred to the committee on Final Resolutions.

The Secretary: This report of the committee on Grading and Inspecting of Fruit, presented by Mr. Williamson, has not been acted upon. I would like to move that the report be received, that the committee be discharged and that a new one be appointed by the Chair to continue the work during the coming biennial period.

Motion was seconded by Mr. Munson and carried.

## TOP GRAFTING OLD TREES.

W. S. COBURN, PAONIA, COLO.

Mr. President: I have been selected to present an article before this honorable body of eminent pomologists upon the subject of top-grafting fruit trees. It is a well-known fact that very little progress or improvement has been made for the past 100 years or more. The same old style of cleft grafting, splitting the stock and inserting the scions, is largely used throughout the world that was used hundreds of years ago. It is an old and true saying that "necessity is the mother of invention" and having put out a fifty-acre orchard in the western part of Colorado some twenty-two years ago in a new country where the growing of fruit was a new venture and an experiment, we naturally desired to know the best varieties of apples, pears, plums, prunes, cherries, apricots and peaches to plant. There was no way to determine this question, except by planting and experimenting, which we proceeded at once to do, planting something like 160 varieties of apples, 40 of pears, 35 of plums, 8 of prunes, 11 of cherries, 14 of apricots, 56 of peaches and about the same of grapes and small fruits; all of which I am pleased to report matured far better than our most sanguine expectations. After ten years, however, we discovered that there was a better demand for fewer varieties. The question arose: What

shall we do? Dig up all the undesirable kinds and plant again with those that are in most demand, or top graft? The old way of splitting the stock seemed to us as being a slow process and quite unreliable, besides it did not look mechanical inserting the smooth cut surface of the scion into a rough torn orifice, although this was the only method that we had known or used when boys some fifty years ago, and one that is still largely practiced throughout the world, we were not satisfied with the results.

I will now present to you a practical demonstration of the method we have used for the past ten years with the most complete success, rarely losing one scion in a thousand, thereby keeping the tree in symmetrical form and changing the poor shaped trees into good forms as well as the fruit. By this method, one can graft a limb six inches in diameter as easy and be as sure of complete success as a limb of only one inch in diameter. By this method, we have top-grafted some two thousand trees from ten to twenty-two years old, never losing a scion unless by some accident while cultivating or hauling out the brush pruned off. We have grafted whole rows of summer, fall and winter, red, striped and yellow, sweet and sour, into Jonathan, Wine Sap and Rome Beauty. The three including Grimes Golden, are the best commercial varieties grown in the State of Colorado.

In conclusion, I will say that anyone, even though he never inserted a scion, if he follow this method will have as good success as those who have practiced it for years.

#### TRANSCRIBED FROM SECRETARY CRAIG'S NOTES

Mr. Coburn then gave a practical demonstration of his method of top-grafting. With a branch of an apple tree representing the stock, and a scion which he prepared, he described the method essentially as follows: The matrix was prepared for the reception of the scion by sawing a longitudinal cleft in the stock instead of splitting it in the ordinary way. This cleft entered the stock in a slanting direction from the base upwards only deep enough to receive the scion. After making the incision with the saw, this was enlarged or widened by using a shoemaker's leather cutting knife. One corner of this was operated like a chisel, and the sides of the incision smoothed and widened. The scion was then prepared by first making a blunt wedge, as if for top-grafting in the ordinary way, and then taking another slice off one edge of the wedge. By doing this, the bark was left only on one side. The three cut surfaces fitted into the cleft, and if the work was done with judgment the entire wound was closely filled by the scion. In this way no opening was left in the middle of the stock. Such openings must be filled with wax to prevent decay, and often this filling is imperfectly done, and frequently the cleft forms a weak point in the union of stock and scion. The accompanying illustration shows very clearly the way in which the scion is prepared and the union is made. Mr. Coburn said that he had top-grafted peaches and plums by this method, as well as cherries, but that in the case of the plum and the cherry special attention must be given to bandaging the bark so that it would not peel away from the scion. The wound was waxed and completed in the same manner practiced with the ordinary cleft graft.

#### DISCUSSION.

Mr. Munson: Why not pinch the buds and superinduce the growth into them and thereby save the cutting off that would be necessary the next year?



Mr. Coburn: I do not know but that would do just as well. I let these water sprouts grow and clean off everything in the spring that will sprout; when the tree is three years old, the Jonathan and Wine Sap will begin to make fruit spurs and bear, but the Rome Beauty makes fruit buds on the new wood, the same as a peach, and the next year this might be a whole line of apples, the whole length of the branch; unless they are taken off the scion will break, it would never pull it out of the socket where I grafted it, and so we check growth by cutting it back. I have grafts which I cut back a foot and they grow to the size of my little finger.

Mr. Munson: I should like to ask Mr. Coburn, what different classes of trees or fruits have you tried this on?

Mr. Coburn: We have grafted whole rows of summer, fall and winter, red striped and yellow sweet and sour, into Jonathan, Wine Sap and Rome Beauty. We take a row and whenever we want one kind, it makes no difference about the stock.

Mr. Munson: I asked with reference to peach, plums and pears.

Mr. Coburn: You have to confine yourselves to plum on peach, or peach on plum; you can do that, but you cannot do anything with cherry.

Mr. Munson: Have you tried it on anything but apples?

Mr. Coburn: Yes, we have grafted peaches and a great many pears; I have grafted a good many on plums, but the bark circles round on the plum and cherry and it is a little more difficult job to put the scions in, because bark of this kind will cleave away, and it will be a good idea to confine it so that it could not cleave away from the scion.

Mr. Burton: Is there any preference where you insert the graft, the top or bottom or side of the limb that you saw off?

Mr. Coburn: You should insert it on the top of the limb where you saw it off, because you want to heal that wound as quickly as possible.

Mr. Burton: You do not get my idea. When you saw off a limb, say it stands in that direction, do you put the graft on the upper or lower side.

Mr. Coburn: Yes, on the top, always do that, because the leverage, when it bears fruit, would naturally be down; if it had not healed that wound there it might break off; it would never pull it out, but it will break it off, for that reason where a limb stands out that way, always graft on the top, then it will be less likely to break.

Member: Do you use any wax?

Mr. Coburn: Yes. Always wax it over.

Member: I would like to ask what is the most desirable time to graft.

Mr. Coburn: Just as quick as the buds begin to swell in the spring. Take your own locality for that; of course the time differs in different localities; that will hit it just right, when the buds begin to swell and the sap begins to flow, and then you can graft for six weeks.

Member: You do not need any tying?

Mr. Coburn: No tying.

The Chairman: Remember that he says you may begin with the beginning of the swelling of the buds and may continue it in Colorado for six weeks.

Mr. Holsinger: I am an old grafter and I will say I have used that same plan more than thirty years ago, and I can substantiate what Mr. Coburn says; it is a success. Furthermore if you stuck that scion right under the bark it would grow just as well.

Mr. Coburn: Many have tried that, but I do not like it that will tear out.

Mr. Holsinger: I have grafted many trees, grafted late, made an incision in the bark, or two of them, quarter inch, and raise it a little with point of your knife and stick the scion under; it will do just as well.

Mr. Heikes: I have been very much interested in Mr. Coburn's paper, and his experiment as he has explained it to us, but I would like to speak of a plan that I have practiced in top working older trees.

The Chairman: Now we are going to ask Mr. Coburn, so that he may come down, and then we will hear your plan. Are there further questions to be asked Mr. Coburn?

Mr. Coburn: I want to say to you that you can cut the groove out smoother and nicer with that kind of a knife. The secret is to drive that scion in solid, and be sure to cut the scion just near a bud.

Mr. Heikes: I thought possibly that my plan might have some advantage in some climates. Now, my practice is to cut back the tops just before the buds begin to swell, before there is any sign of growth, cut back those trees, get them in such shape as you would like to have them; if you allow some limbs to remain on, then allow those limbs to sprout and grow possibly about half mature, then I put buds in them and allow them about ten days' time so they are well united, then cut back those branches and force the buds out the same year. I find that the most practical way in our section. I think there will probably be less loss in blowing out the new growth than there would be in grafting; we will certainly have much better plants than to put buds in and allow them to remain in during the winter, because if you do that they are almost sure to blow out or break down the next spring.

The Chairman: We will hear from Mr. Munson relating to his plan of fruiting grape vines.

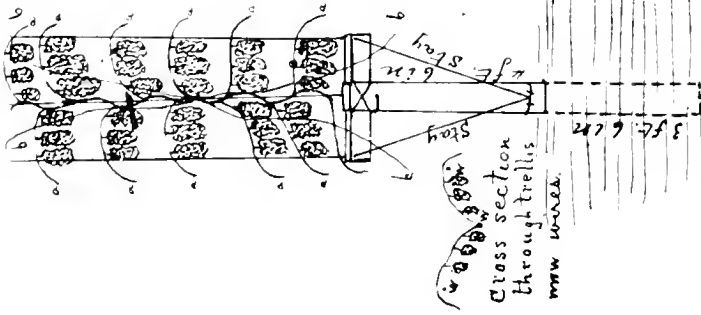
## THE GRAPE, THE COMMERCIALY NEGLECTED FRUIT; CAUSE AND REMEDY.

T. V. Munson.

While vast orchards of peach and apple are very properly being planted in almost all parts of the country where such fruits thrive at all, the grape is, with the exception of a few isolated regions, almost entirely neglected for commercial planting, in all the great region east of the Rocky Mountains, although there are varieties of grapes of fine commercial qualities which succeed admirably in this region. In France, Spain, Italy and other parts of Southern Europe, where the climate and soil are no more favorable to grape culture than in this country, especially all our southern and middle regions, grape culture leads in extent and profitability by far all other fruits. True, the free manufacture and use of wines largely accounts for this, yet if we take into account only table and raisin grapes, they still outrank any other fruits in South Europe.

The grapes by chemical analysis and practical test far exceeds all our other fruits in richness and healthfulness of food content; the vine thrives more universally throughout the country, and is much the surest and most prolific cropper, year by year, of any fruit we have, save the blackberry and raspberry; the fruit remains on the vine in commercial condition longer than any other of our fruits, save perhaps, late apples, and carries to distant markets almost as well as apples, better than peaches, as a rule; it is loved by everybody and can be eaten with most beneficial effects several times a day by anyone, even those with weak stomachs; it is perhaps every way the most refined and beauti-



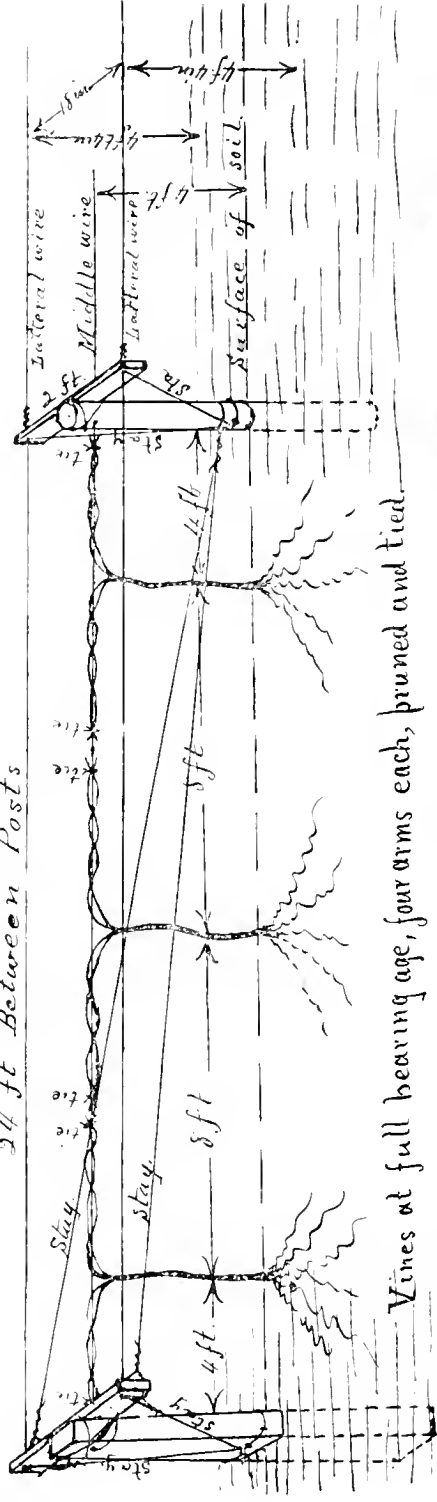


Cross section through trellis  
www.uwax.

*End View of Trellis*

Looking down lengthwise  
one row, showing a  
vine in, fruit with  
foliage off.  
aaaa bearing shoots.  
bbbb young arms for bear-  
ing next year.

*24 ft Between Posts*



Vines at full bearing age, four arms each, pruned and tied.

*End Post 8 ft.  
4 ft. in above  
ground.*

# The Munson Three-wire Trough Trellis.

ful of fruits and is of almost infinite variety, in color and flavor; it can easily be converted into staple commercial products, in ready demand at very profitable prices, as fresh grape juice, concentrated must, jellies, raisins and wine, all of which are healthful and temperance begetting. The ban of prohibition against pure grape wines by organized, so-called temperance people, is a mistake, as proven in California and Arkansas and France, where wines are not prohibited, and where grape culture ranks high in extent and profitableness, and where drunkenness from the wines is little or seldom known, and the more abundantly a country is devoted to winemaking and using, as in France, the less is drunkenness known, and the pernicious use of distilled beverages is quite unknown. These facts ought to free the most profitable product of the grape,—wine—(though not the best) from the ban of prohibition laws. But I did not intend a lecture on temperance, although I greatly love true temperance in all things.

With all these good things belonging to the grape, why is it so much neglected in commercial planting? Nearly all the nurseries throughout the country annually grow vast blocks of peaches and apple trees, while in few of them will any space be found devoted to grape vines. This is an index of the demand for commercial planting. I will try to answer this question briefly.

Probably the chief reason is that the people generally who engage in fruit-growing are familiar with the growing of berries and tree fruits and know little regarding the vine, except as a half-ornamental arbor vine in the yard. In confirmation of this theory, note how every French horticulturist from the grape regions of France, takes to grape growing, when he comes to this country, as naturally as a duck takes to the water. Although he finds himself handicapped by the general failure of French varieties in this country, and the prevailing prohibition laws, yet his inherited love of the vine and its culture compels him to hunt out our best American sorts and plant them, and make his casque of wine for family use, if no more.

That which deters many is the contemplation of the considerable first cost of establishing a vineyard,—the purchase of 500 to 600 vines, per acre, according to vigor of growth of kind planted; the thorough preparation of ground, the trellising and the expert cultural work required in pruning and training, and the handling of the crop.

It is greatly handicapped, in most of the states, to the man who would engage in wine-making, by prohibition law, but outside the wine business, I still hold that grape culture, in all the territory east of the Rockies and south of forty to forty-two degrees latitude in the United States, presents one of the most delightful and profitable fields in the whole round of fruit-growing. There are very successful and profitable varieties now in cultivation well adapted for every region, and the method of establishing, trellising, pruning and training, harvesting and marketing, are so cheapened and simplified that anyone with little capital and ordinary wit and judgment can readily and profitably engage in the culture of the vine. True, it is, that viticulture is the acme of the horticultural art, when carried on in its best state, and for this reason, it affords one with artistic tastes, greater pleasure perhaps than any other branch of fruit-culture, and hence should be much more fostered than it is.

Now, if space and time would permit, I would like to point out what I conceive to be the best methods of planting, trellising, pruning, training, harvesting, and marketing the grape, but they will not, yet I will try to elucidate the chief bug-bear to many who think of grape culture—that is, trellising, pruning, and training.

Numerous methods of trellising have been invented and practiced; numerous books explaining these methods have been published, yet improvements not given in the books have been made.

Years ago the writer went extensively into the study and testing of the various leading methods in vogue, to determine, if possible, the most economical and the most efficient for commercial vineyard purposes, and as a result found a trellis of his own invention, which with constant use in his vineyards for over eighteen years, has given much better results, with greater saving of time in pruning and tying, with many other advantages over trellises ordinarily in use. This has not been patented. It is freely given to the world. It, in its earlier, cruder form several times has been published and illustrated, but my latest method of construction which I now for the first time make known to the public, is an improvement in economical construction of what is known as the *Munson Three Wire Canopy Trellis*, and is as follows:

The posts should be of some durable strong wood, such as Bois d'Ara, (Osage), Cedar, heart wood of Catalpa, Black Locust, or White Oak. The end posts of every row should be large and strong and be set three and one-half or four feet in the ground and well tamped. The intermediate posts, which may be much lighter than the end posts, should be six and one-half or seven feet long and set two to two and one-half feet in the ground, with twenty-four feet spaces between posts, which will take three vines, eight feet apart, or two vines twelve feet apart. After the posts are set, a three-eighths-inch hole should be bored through each post, four feet from the surface of the ground, in the direction in which the row runs, leaving six inches or more of post above the hole. These holes are for the admittance of the middle, lower wire, of the trellis.

For each end post prepare for cross-arm, a piece of two by four hard pine or oak, two feet long, and at one inch from either end, and one inch from the upper side, bore a three-eighths of an inch bit-hole, to pass the lateral wires through, and in the middle of the lower side, saw a notch one-half inch deep. For each intermediate post, prepare a board of similar wood, two feet long, one inch thick by four broad, and likewise bore and notch.

Through the holes in the posts run a No. 11 galvanized wire fasten at one end, tighten at the other end by a wire stretcher and fasten. This will be the middle and lower wire of the trellis, and all that will be needed the first year, when the young vines are trained up a string tied from the vine (when set) to the wire, and along it.

The arms, and the two lateral wires which they bear need not be put on the trellis until after the vines are pruned and tied the next winter.

To put on the cross-arms, use no bolts or nails, only No. 11 galvanized wire.

Each end cross-arm is placed inside the post, and against it on top of the wire, already through the posts, notch-side downward, straddling the wire, to keep it from sliding. Then take a piece of same size wire, about seven feet long, pass one end through the bit-hole in one end of arm and fasten it by looping and twisting about six inches of the end back upon itself, then, while one person holds the cross-arm in place, the operator carries the wire down around the post once near the ground, staples it on each side and brings the other end up to the opposite end of arm, puts it through the bit-hole, draws it tightly keeping the arm level, and fastens the end of the wire as was done the other. Wire nippers and pliers will be needed for this work. Then take another piece of wire about two feet long, and put it twice around the cross-arm and

the post where they come together, above the middle wire and firmly tie them together, crossing the wire as it goes around. This will hold the arm in place and not weaken or split the arm as do nails and bolts, and will be longer-lasting, quicker and cheaper, and more elastic, so that when struck by the hames or collar in cultivation, it gives a little, receiving no damage.

Likewise place the cross-arms on the intermediate posts, leaving the ends of the wire projecting about six inches after fastening, for a purpose soon to be mentioned. Then fasten a piece of wire something over twenty-four feet long to each end of the cross-arm at either end of the row, draw both tightly around the next post from the end near the ground and fasten, so as to hold the arm at right angles to the middle wire. Then draw the two lateral wires through the bit holes in the ends of the arms, throughout the row, tighten with the wire stretcher and fasten. Then return along each lateral wire, holding each cross-arm a right angles with the wires, and wind the aforementioned ends of wire at the ends of the arms very closely and tightly around the through-going lateral wires, as telegraph and telephone wires are wrapped in splicing. This is quickly done with the proper pliers, and prevents the arms from slipping out of proper position. Now the trellis is complete, and will last as long as the vineyard, if well made of good material and will need little or no repairs, and looks very neat, especially if painted.

One other matter should not be neglected. Into the soil at the foot of the middle post of each row, a wire should be run into the earth deeply, say two or three feet, which can usually be done with the hands, if the soil is moist and not too rocky, then the wire should be brought up by the post, wound tightly once or twice around the middle wire and then be cut off some eight or ten inches above, and left projecting straight up, to serve as a lightning rod. A vineyard thus provided with lightning arresters will take off, noiselessly and harmlessly, the heaviest of charges from a cloud. I have had rows of vines, not provided with ground wires, almost destroyed by lightning.

#### PRUNING AND TRAINING

on this trellis is very simple and easy with a little instruction for a few minutes with a vine or two pruned for example. The vine the first season is allowed to grow up onto the middle wire by a string around which it is coiled by hand, by going over the vineyard once or twice until the selected shoot of each vine is upon the wire, after which it is allowed to ramble at freedom over the wires. By getting onto the trellis the first year, one strong shoot, and allowing no other to grow, a partial crop can be had the second year, without damage, on all but weak growers, like Delaware, that should not be allowed to bear until the third year. At the first regular pruning (all prunings should be done in November, after leaf fall, and never so late as to cause the vines to bleed), the vine should be cut back to two or three buds that have reached the middle wire, if weak growers, if strong, with heavy growth, six or eight buds each, to two arms, one going each way along the lower wire from where the ascending vine first touches the wire. After the vines are thus pruned, the outer end of each arm is firmly tied to the lower wire, along which it is gently coiled. These two ties hold the vine firmly in place. The buds on the arms, push and ascend, passing over the lateral wires, clinging thereto with their tendrils, and hang over like a beautiful green drapery shading the fruit and body of the vine according to its natural habit. Buds that push on the body of the vine below the crotch of the vine near the lower wire, are rubbed off as they appear, and after blooming the tips of all the bearing shoots are clipped off with a quick

stroke of a light, sharp butcher knife. This causes the growth to concentrate in the fruit, greatly increasing the size of the berries. But the four or five shoots pushing nearest the crotch of the vine should not be tipped, but the flower clusters, if any on them, picked off and the shoots allowed to grow in freedom along the trellis above the bearing shoots, to better shade the fruit, and develop themselves ready for cropping the next year. This is known as the long arm renewal system, in contradistinction to the spur system of pruning, and gives much better results.

At second year's pruning and others following, the old arms with all the bearing shoots on them are cut off down to the new arm and the new arms cut back to lengths they can fill with fruit and well mature. In this, critical judgment and knowledge of capabilities of different varieties are more required in the pruner than in any other of the training work. Some varieties, such as Delaware, cannot carry more than three to four arms, while Herbemont can more easily carry four arms each eight feet long, hence such as Delaware should be planted eight feet or less apart, while Herbemont and most of the Post-Oak grape hybrids, should be twelve to sixteen feet apart. In other words, each variety should be set that distance apart that it will fill the trellis with fruit from end to end, and mature it well, so as to better economize space.

By the third year, the vine should come to full bearing, and be pruned with four bearing arms, two to go each way along the lower wire of trellis, gently coiling around the wire, one arm in one direction, the other in opposite direction, and should be of about equal lengths, so that one firm tie with jute yarn, near the ends, will be all the tying the vines will need—that is, two ties to each vine—the least required by any trellis system, and the pruning is also simplest and the results every way the best.

Some of the advantages of this trellis are its cheapness, its simplicity, bringing the work up breast-high so that pruning, tying, harvesting, spraying can be done in an erect position, saving back strain; perfect distribution of light, heat, and air to foliage and fruit and soil, yet protecting body of vine and fruit from sunscald and birds; giving free ventilation and easy passage of wind through the vineyard without blowing down the trellis or tender shoots from the vines, and allowing ready passage from row to row, without going around, thus getting larger and better crops at less expense and increasing length of life of vineyard and the pleasure of taking care of it.

The cause of the lagging of viticulture in this country is not, as some suppose, the want of profit in its pursuits, as, for many years, we have in connection with our nursery business grown berries, plums, pears, peaches, apples, and grapes, in considerable quantities for market, and although our vineyards were largely devoted to testing new varieties, we found the grape steadily the surest to bear annually, and more readily marketed and more profitable in proportion to outlay. The chief cause, I fully believe, is the lack of practical knowledge of the business. If I am correct in this, then the remedy is education of fruit growers on the subject. It then stands the nurserymen in hand to become better informed in this branch of their business and to extend the knowledge freely to their patrons and thus add to the prosperity of themselves, their patrons and the country at large.

Mr. Holsinger: What is your experience with sacking grapes?

Mr. Munson: That is a practice entirely apart from the trellis. It is all right for amateur culture about the home in a small way, but for market purposes, or commercial vineyards, it is impractical.



## THE APPLE AT THE LOUISIANA PURCHASE EXPOSITION

John T. Stinson, Superintendent of Pomology.

It was with much pleasure that I accepted the invitation of our secretary to present a few notes on the apple exhibits at the World's Fair at St. Louis, for I realize that the members of this Society are always interested in the fruit exhibits of the great expositions.

The apple growing sections of the United States having been greatly extended since the Columbian Exposition at Chicago, made it possible for states which were not considered apple states at that time, to maintain at St. Louis splendid apple exhibits. The apple belt has been gradually extended westward and I think that it is safe to say that this meeting is held in the center of the great apple growing region of the country. Under these existing conditions it is no wonder that there was maintained at St. Louis the greatest apple exhibit that was ever attempted or contemplated at any other Exposition. The nearby states made wonderful exhibits, which they were expected to do, but a number of distant states made larger and better exhibits than they naturally were expected to, for it was not anticipated that states located so far away could install and maintain such creditable exhibits.

An effort was made to secure careful notes on all exhibits for the purpose of drawing conclusions as to the sections producing apples possessing the best keeping qualities. It was, however, found impossible to form a definite conclusion for the reason that the fruit from different localities and different states was not all handled in the same manner. There was some delay in assembling for shipment the exhibits from some states, and while some states located at a distance shipped in iced cars, those nearby used ordinary cars and frequently shipped by express.

The Department of Horticulture took advantage of every means to make the apple exhibits of high educational value. In promulgating rules and regulations covering the exhibits this point was kept in mind, and it was made one of the requirements that all fruit must be exhibited in the name of the individual grower and that the labels placed on same should bear his name and post office address. This was of value in studying the effect of climate on the varieties grown in different sections.

The apple exhibits were complete from the opening to the close of the Exposition, covering a period of seven months. Each participating state made extensive preparations for these exhibits by placing large quantities of apples in cold storage of the crop of 1903. The state superintendents worked in co-operation with the Department of Horticulture to make the finest and most extensive exhibits, and as a result of their efforts there were stored in St. Louis enough apples to keep nearly the whole exhibit space devoted to Pomology covered during the entire Exposition period had it been necessary. Mr. L. A. Goodman, Superintendent of the Missouri State Fruit Exhibits, put into storage 3600 bushels of apples. This was the largest amount stored by any one state for exhibition.

Early in 1903 the Department of Horticulture published a bulletin which contained the most complete information obtainable on the best methods of packing and handling fruits for exhibition purposes and the latest information on cold storage temperatures, etc. This bulletin was used freely by the state

superintendents in charge of collection fruit exhibits and by individual exhibitors.

The fruit was packed and handled in a better manner than had ever been done previously. The apples were carefully wrapped in double paper wrappers, packed in bushel boxes or in barrels and put into cold storage or iced cars as quickly as possible after they were taken from the trees. They were kept at a temperature of 32 degrees and all, excepting those from one state, were kept in one cold storage house. As a rule the apples grown in the colder climates kept better in storage than those grown in the Southern States. Those in charge of the exhibits from the Southern States had no trouble, however, in convincing visitors that apples grown in their states would keep in a satisfactory manner, and it seems that the success they attained in keeping the fruit will greatly aid in convincing many people, who had been skeptical about apples from Southern States keeping. They were able to show that apples can be successfully kept in storage if the fruit is properly handled before it reaches the cold storage house.

The cold storage methods have been much improved during the past few years. The Department of Agriculture at Washington and a number of Experiment Stations have carried on careful experiments in storing apples at different temperatures and with different methods of handling, so that reliable information is easily obtainable.

The advantage of using paper wrappers was shown in every state exhibit. In several exhibits some apples were sent in by a few individual exhibitors who failed to wrap the fruit, and in practically every such instance the fruit was unfit for exhibiting, while the wrapped apples from the same sections and of the same variety came out of cold storage in fine condition. The evidence in favor of paper wrappers for apples in cold storage was so overwhelming that it will greatly influence fruit growers and packers to wrap fancy apples which go into storage.

The results of this careful work on the part of the superintendents, was shown when the apples were taken from the cold storage house and placed on the exhibit tables. In many instances where the apples were placed on the tables at the opening of the Exposition there would not be one apple in a box that was not in perfect condition for exhibit purposes. Some of these apples remained in storage until August or September and were in good condition then and kept up well after being placed on the tables. Such varieties as Jonathan and Grimes Golden are generally supposed to be off the market in January, but these varieties were kept on the tables in a number of state exhibits during most of the summer, and Jonathans of the 1903 crop were exhibited by Missouri during the whole Exposition period.

I had the pleasure of going over the fruit exhibits with the members of the American Apple Shippers' Association when they met in St. Louis in August and they expressed themselves as surprised that Jonathan apples could be kept in such fine condition for so long a period.

I think the best lessons learned from the exhibits were the facts learned concerning the possibilities of cold storage for apples. The large number of varieties assembled from all sections of the country furnished the best opportunity that has ever been offered for the study of apples in cold storage. It was demonstrated that all varieties of apples can successfully be kept in cold storage.

The results show that apples must go into cold storage in good condition, not too ripe and yet fully ripe. Many growers have an opinion that apples not

fully ripe will keep better in storage, but it was demonstrated that apples that were not fully ripe did not keep so well and were more subject to scald, and that over-ripe fruit did not hold up satisfactorily when placed on the tables.

The advantage of getting fruit into cold storage at once after gathering was shown in a number of instances for whenever there was delay in assembling the fruit it was damaged to some extent in each case.

The state superintendents were urged to make careful notes as to the effect of storage on the different varieties, and records as to the time the apples were packed and placed in storage and taken from storage. As a rule the superintendents were men who were leading horticulturists in the different states, so that it is expected that the records and notes made by them will be used for the advancement of horticulture.

In selecting the men who composed the Jury of Awards it was the object to obtain men who would utilize the information secured by them while performing their duties as jurors. The members of the jury on fruit exhibits were men connected with the Division of Pomology of the United States Department of Agriculture, the different State Experiment Stations, Agricultural Colleges and Horticultural Societies in fruit growing States. It is expected that the information collected by them will be used for the advancement of pomology in all parts of the country.

It was decided to celebrate one day as Apple Day at the Exposition and a day was so designated by the Exposition management. This attracted much attention in all parts of the country, and a number of letters were received from Europe concerning it. The idea in celebrating a certain day was to attract special attention to the apple as a food, and to provoke a discussion of the subject. The date selected, October 4, was a time when Grimes Golden, Jonathan, and other good eating apples were available. Every visitor to the Exposition on that day was given apples free. The different states provided liberally for it by supplying large quantities of good eating apples, and one state gave away an entire carload.

Since the Exposition closed there has been much favorable discussion on the proposition of having a National Apple Day. It is planned to celebrate the anniversary of Apple Day at Guthrie, Oklahoma, this year by giving away apples to all school children in the city and to have apples served at the hotels, restaurants, and in the homes. A movement is on foot in Guthrie to induce the Legislature of Oklahoma to designate a day for the annual celebration of Apple Day.

#### NOTES ON APPLES IN STORAGE

The following notes are given on the condition of the apples in a few of the state exhibits:

*Arkansas.* The apples that kept best in storage are Winesap, Arkansas Black, Ben Davis, Shockley, and Collins.

Minkler and Missouri Pippin kept only fairly well. Jonathan came out of storage in good condition and kept up fairly well on the tables.

Arkansas (Mammoth Black Twig) scalded some in storage, also Ben Davis when packed before fully ripe.

*California.* The varieties keeping best in storage are, Rome Beauty, White Winter Pearmain, Winesap, Arkansas Black, Ben Davis, and Stones Eureka.

Yellow Bellflower came out of storage in good condition and holds up well.

The varieties that kept poorest are Lankford, Smith Cider, and Yellow Newtown Pippin.

*Colorado.* The fruit all kept well in storage. The varieties that kept best are White Winter Pearmain, Winesap, Arkansas Black, Ben Davis, King, and Missouri Pippin.

The York Imperial kept well and was free from scald, while Arkansas scalded some.

*Michigan.* The apples that kept best in storage are Dr. Walker, Cooper Market, Mann Pawpaw, Northern Spy, and Willow Twig.

The Wolf River kept remarkably well in the Michigan exhibit for this variety. The apples that did not keep well are Black Detroit, Belmont, Walbridge, Crockson, Bottle Green, Twenty Ounce, and Peck Pleasant.

*Canada.* The varieties that came out of cold storage in best condition are La Salle, Canada Red, Northern Spy, Ben Davis, Red Russet, Golden Russet, Mammoth, Mam, Baxter, Blu Pearmain, Winter St. Lawrence, Nonpareil, Baldwin, Bethel, Langston Russet, and Red Pearmain.

Those that kept fairly well to best are McIntosh Red; it is an early apple and is in good condition, so is Cranberry Pippin; Fameuse, considering its season is very good. Other apples that are in good condition are Yellow Bellflower, Cornish Aromatic, Stark, Grimes Golden, however Grimes Golden was small and not attractive. Pewaukee, Wellington, and Maiden's Blush; Rome Beauty, solid, but somewhat scalded, and Rhode Island Greening was scalded some also.

The apples that kept the poorest in storage are Alexander and White Calville.

*Texas.* Best in storage: Winesap, Romanite, Arkansas Black, and Missouri Pippin.

Shockley scalded some, as also Ben Davis, which did not hold up well.

*Oregon.* Best in storage are Hyde King, Arkansas Black, Winesap, Newtown Pippin, Ben Davis, Huntsman, Arkansas, Detroit, Gano, and Willow Twig. The Newtown Pippin kept best of all on the exhibit tables.

The varieties keeping poorest were Baldwin and Spitzenburg.

The following notes were dictated by Mr. L. A. Goodman in charge of the Missouri exhibit on May 18:

*Missouri.* These apples were put in storage beginning the 15th of September, and we kept putting them in from that time until the last of October. Apples were almost invariably packed the same day or next day after gathering and inside of forty-eight hours they were in cold storage. They were shipped by express direct to the cold storage, so that in very few instances were they delayed more than two days. In a few instances barrels were delivered to freight offices and it was two weeks before they were put in storage, in such cases we find the apples not keeping well, showing scalds and the effects of handling more than those that went direct to cold storage. We are satisfied from experience if apples can be gathered just at the right time, not too mellow and not over-ripe, and then be put in cold storage immediately, that apples keep almost perfectly and especially so if they are put at once in the temperature of 32 degrees and held in that temperature without variation. In such instances where they have been thus properly gathered, handled, and put in storage, we find that on opening a barrel or box that there will be scarcely a specimen in the whole barrel but what will be fit to go on the tables. We find also a remarkable difference in the apples gathered properly and wrapped first in tissue paper and then in wax paper before packing in barrels and boxes, and in those which are simply gathered and put in packages without being wrapped. I find a difference in the keeping qualities and condition of speci-

mens when they are opened from ten to twenty-five per cent. The idea that apples must have air and ventilation in the barrels is a wrong one, because we find where we have thoroughly wrapped so as to exclude all the air that the apples have kept much better. Early apples like the Jonathan and Grimes have kept almost perfectly and are holding up in perfect condition from ten days to two weeks. Huntsman has scalded probably as badly as any of them. Mammoth Black Twig shows scald, while the Grimes Golden, which we expected to show scald badly, is showing less than any other. I attribute this to the temperature in which they are kept. York Imperial is badly scalded. The Clayton is one of the best varieties for cold storage. Willow Twig is another variety that comes out perfectly; in fact it has been on the tables for two weeks and shows no tendency whatever to decay. Ingram is holding up remarkably well and Gano is holding up good. We find the Ben Davis, when packed before it is fully ripe, badly scalded. A new variety called the Nixonite has shown scalds worse than any variety. This, however, is probably due to the fact that the apples were shown at the Apple Growers' Congress and State Meeting in December and now when put on the tables show a tendency to discolor. This fact does not prove that this variety would not keep well in cold storage, if put in at the proper time and properly handled, but certainly gives us a lesson on the fact that apples will not keep well and hold their own when taken out of cold storage and exposed to the air for any length of time and then put back into cold storage. Through careful experiments we have found that even late summer apples have come out of cold storage after the middle of May with a very light loss, when properly handled. These facts tend to assist us in the study of proper fruit handling and proper storage of the fruit after handling. The conclusion we have arrived at, at the present time, is that we can even take August and September apples, gather them when they are ripe and well colored, but not soft, put them at once into cold storage and they can be held until January, February, or March without real loss. This Exposition has been giving us an opportunity to secure some very valuable facts in regard to cold storage, which facts if secured and classified from week to week during the World's Fair season, will be worth many thousands of dollars to the fruit growers.

Mr. C. H. Edwards, Superintendent of the Montana Exhibit, worked in co-operation with the Department of Horticulture in securing notes on cold storage of apples, so his notes on Montana exhibit, taken May 18, are given:

*Montana.* May 18. On this date apples were cut open to ascertain the condition of flesh and flavor. Blue Bullets out of storage May 5th, eight specked apples in box, on tables seventeen days, perfectly sound, and retaining favor very well. Northern Spy: not one specked in box and out of storage twenty-one days, firm in every way; retaining flavor, but showed some shriveling. Wealthy on tables twenty days, when opened found few specked apples, balance good, it showed some shriveling, slight discoloration at core, fair flavor. Baltimore out twenty-one days, showing general breaking down, and flavor only fair, came out of storage in good condition. Wallbridge came out sound, showed slight shriveling in twenty-one days, sound, flavor good. White Winter Pearmain came out of storage sound, now out twenty-one days, shows signs of shriveling. Gano came out sound, out twenty-one days, signs of shriveling, flavor retained very well. Wagener came out sound, flesh fine, showed slight scald. Delaware Red came out in good condition, now decaying, flavor poor. McIntosh came out of storage in good condition, now out seventeen days, no shriveling, slight discoloration at core, flavor good. Stark came

out fine, out twenty-one days, holding up well, fine in appearance, retaining flavor. St. Lawrence: fourteen specked apples in box, balance good, shows signs of general breakdown. Northwest Greening came out fine, now but seventeen days, shows signs of breakdown, only fair. Alexander came out of storage fine, some shriveled, light in weight, but sound. Wolf River came out in splendid shape, now out twenty-one days, shows some shriveling. Baldwin came out fine, out twenty-one days, slight breakdown, no shriveling. Ben Davis is perfectly sound. Others that came out of cold storage in good condition are Gloria Mundi, Golden Russet, Ralls, Talman Sweet, Pomme de Fer, Gideon, and Grindstone. Those that were in poor condition are King, Yellow Bellflower, Maiden's Blush, Scott's Winter, and McMahon.

Mr. C. H. Vick in charge of the New York exhibit, under date of May 20, furnished the following notes:

*New York.* Of the thirty varieties of apples placed on the tables for the opening day of the fair, the following have been removed: Sweet Russet May 10, Judson May 16, Sklanka Bog May 17, and Wagener May 16.

The Fallwater is in splendid condition, not one apple having been removed from the plates. Swaar is keeping fairly well, slightly withered. Golden Russet is firm and hard. Snow is keeping sound. Bellflower is in fair condition. Cline's Red still hard and firm. Red Rock in good condition. Holland Pippin is keeping extra well, fruit hard and firm. Nonesuch and Deacon Jones both in fair condition. Peach in good condition. Flower of Genesee fairly good, slightly specked on outside. Baldwin and Lady keeping fine. Kirkland is in excellent condition, firm and hard, and no discoloration. Greening is fair condition, slightly specked. Spitzenburg sound and hard. Walbridge in fair condition. Seek-no-further in fine condition, sound and firm. McIntosh is keeping remarkably well, no apples having been removed. This variety is not considered a good keeper and the way it has lasted is a surprise. Mann in poor condition, King in splendid condition, and Canada Red firm and hard.

## THE PEDIGREE QUESTION

BY M. CRAWFORD, CUYAHOGA FALLS, OHIO

(Presented by the Secretary)

In January, 1904, my partner and myself agreed to make a very thorough investigation of the pedigree question with the understanding that if there was anything in it we would buy that kind of stock from which to grow plants. We had no faith in the theory, but believed, and still believe, that the so-called pedigree plants, if well grown, are as good as any. I inserted the following paid advertisement in a number of leading horticultural papers with a view of getting the desired information:

"M. Crawford, of Cuyahoga Falls, O., who has made a specialty of the strawberry for over forty years, is collecting information concerning 'thoroughbred' or 'pedigree' strawberry plants. He wants to correspond with any person who has had experience and can give facts—not theories—that will enable him to arrive at the truth. He also wants to buy a few 'mongrel' or 'scrub' plants of a number of well-known varieties that have been grown under neglect until they have lost, or nearly lost, the habit of blooming. He hopes, by correspondence and experimenting, to obtain information that will be of value to strawberry growers. If you can help in this this matter, either directly or by referring him to someone who can, please do so. In return, Mr. Crawford will send you, in due time, some valuable information on the subject."

This brought a large number of responses from parties who had given so-called pedigree plants a trial. Only one of these was in favor of them, and, later on, he admitted that he had not made a careful test. Since that time I have corresponded with a man who is decidedly in favor of so-called pedigree plants and says that they have given him better results. So we have about two letters favoring the pedigree theory to fifty against it.

We purchased pedigree plants to be grown and fruited alongside of others, but they came late in the season and were not in good condition, so there could be no fair test, and they were never planted.

According to the pedigree theory, strawberry plants grown under neglect will produce but few berries and even these will be knotty and imperfect. In response to our advertising we received so-called scrub plants from many sections, from Connecticut to Nebraska. Many of these had been growing in the grass for from seven to thirty years. Among them were Jacunda, Crescent, Miner, Glendale, Capt. Jack, and other old well-known varieties. They were grown in hills and all treated alike. Many growers came to see them, and all agreed that they had lost none of their old-time productiveness and merit. Whatever could be said of this single experiment, it was a success in disproving the claims made by growers of "pedigree" plants. If these "scrub" plants had not deteriorated, although the worst of their kind, why should we expect that "thoroughbred pedigree plants" would improve?

When we examine the testimony offered by growers of pedigree plants we are still in doubt. We are surprised that out of many thousands who have purchased these much-lauded plants during the last fifteen years, it requires fifty dollars' worth of advertising to find one who is willing to express a preference for them.

Instead of direct testimony that we could rely on, we are treated to the suggestive method adopted by venders of patent medicines. We are shown pictures of thoroughbred animals, the best of their kind, and of scrubs, the worst of their kind, and the inference is that there is about the same difference between "thoroughbred pedigree plants" and "scrubs." We see a picture of a man looking at a strawberry plant, and we are told that he is looking for bud variation—and of course he found it. A member of a firm is invited to deliver an address at a meeting of plant breeders, and the impression is conveyed that he, too, is a plant breeder, although he never raised a seedling. So this pedigree theory has been built up, and there is left the inference that those who refuse to accept it are blind or unprogressive, and that their plants, however carefully grown, are only "scrubs."

Our fruit-bearing plants are propagated by buds and seeds—there's no other way. A plant grown from a bud is not a new creation, nor a new generation. It is only an extension of the plant that produced the bud, and possesses all of its characteristics, neither increased nor diminished. A plant grown from a seed is a new generation and may vary from its parent. All new kinds are produced from seeds. A new variety was never produced by a bud, except in the case of a sport, which no person can produce at will.

A plant breeder aims to unite the desirable characteristics of two varieties in one new seedling, and then it may be increased by buds. This is the work of the propagator. Improvement or even deterioration is never brought about by buds, but always by seeds. One of my friends selected the most perfect potatoes from the best hills for eleven years in an effort to improve the form, and utterly failed. The theory of improving fruits by taking buds from the best trees is very old, but there's nothing in it.

## LESSONS FROM THE FRUIT EXHIBIT AT THE WORLD'S FAIR

L. R. Taft, Michigan.

I was asked to tell you in about five minutes all the lessons I learned at St. Louis in seven months. I am glad Professor Stinson has helped me out in regard to the matter of packing and sorting of fruit. In the few minutes I have I want to speak a little more in regard to the matter of exhibiting fruit. It seems to me that is a very important question, and if I can take it up as a sort of kicker, I think I can tell you more in the time I have than if I took up the good points of the exhibit, because there were so many of those I could not begin to cover them. The first thing that struck me in a few cases as being objectionable was the fact that they sent persons there to take charge of the exhibits for perhaps two or three weeks, then they changed all around and kept this up through the season. One of the managers of the exhibit would just be in shape to have his fruit put up as it should be when he was called home. Another bad feature was that they were there for two weeks and wanted to take about half of that time at least to see the fair; the result was that the exhibits in those cases were not looked after, but where the men ran through the season, the exhibits were well cared for and well sustained.

## INSTALLATION

Another thing about showing exhibits that I want to speak of is that of installation. Those of you who were there recollect that for the greater part they used the level installation, the flat table, and I want to speak as strongly as I can in favor of that form of exhibit. You recollect that in some States the exhibits were more or less architectural. I believe that to be all right in its place, and it was in its place there around the outside of the exhibition hall; there you can have these passages and arcades and things of that kind, but for the greater part I believe that we should have our fruit on these flat tables in the middle of the hall, so far as that goes. I want to emphasize the importance of having fairly wide tables. You recollect some of the States had tables, we will say, five feet in width, and to me the effect was far better, because it appeared to be a solid mass of fruit through the entire length of the hall, than where they had two or three feet and then two or three feet for a walk.

Another thing that I want to speak of along that line is, not to have the plates arranged on shelves and tiers. You lose the effect, because you only see one-half the fruit at one time. And another thing, in putting up the exhibits, do not break them up too much. I recall several States where you would see at one time a table of fruit perhaps of one hundred plates, you would have to go around and another table would appear, and in no case would you see anything like a one-tenth part of the fruit. That was exceptional, of course, but there were cases where this was noticeable. Have all the fruit arranged on broad tables, so that you can see it all from any one point. Try to have things as nearly as possible harmonious throughout, having, for instance, a white table, and I believe they should be white, and having in the heavy railing some dark color which makes a poor contrast, and have everything in the way of architecture that will harmonize of the same light color with the tables. We had several exhibits there that toward the end became, well—almost offensive to the eye, they were dirty and grimy, whereas those with



the white tables were properly cared for, because they had to be to look anywhere right, and it seems to me that if we could have some uniform color throughout the exhibit, white would be my choice, with a light railing if you prefer, although I can see no use for that, so you can get from any good point the full effect of the entire exhibit. I believe it will heighten the effect of the exhibit.

#### LABELLING

I would emphasize more the importance of careful labelling of fruit, and I believe we should do more to have the labels in sight. Oftentimes they will tuck one beneath the fruit, whereas if we have some simple label holder, it will make it possible for anyone in passing to read the label of the fruit.

Another thing that in a few cases might be criticised, and very few indeed, and that I think was due to the fact that their fruit supply was short, it was not removed promptly enough from the table when it commenced to decay, but it certainly in a few cases did not improve the fruit to have it allowed to remain as it was oftentimes. Of course they attempted to make a record, as you might say, of having the fruit held over six or eight weeks after having been placed on the tables. I mention this fact as important and yet it did not occur in many cases in the exhibit in St. Louis. One of the things we tried to do when we first commenced to work, and the jurors who were there with us will remember that we spent hours and days sometimes going around and collecting duplicate fruits of the different states for comparison. We hoped we would have something that would be of value along that line of the variation of fruits in different States, but we did not know anything about the origin of this fruit. Some came from young trees, others from old trees, others on heavy land, others on light land, some from the mountains and some from the valleys, and we found greater difference sometimes in the fruit from one State than we did in the fruit from different States.

#### GENERAL OBSERVATIONS

There were several things noticeable. As a rule the irrigated fruit was larger in size than that from unirrigated land. We noticed, too, that the larger specimens were generally more or less crinkled around the basin, and we found, too, that certain types of the Ben Davis group, for instance, were better in quality in the states in this latitude than it was farther north, and at the same time we could find that many kinds in the North did not succeed well in the South, so that it showed very nicely the importance of carefully selecting the fruit to fit the locality so far as the State was concerned, and also to adapt it to the particular soil and conditions of your orchard; that seemed to be of the utmost importance. There were during the season many other things cropping up that I would like to have time to tell you, but the dinner hour has long since passed, and most of you I know were at St. Louis yourselves and had many of these lessons well fixed in your minds.

#### THURSDAY AFTERNOON SESSION

September 21, 1905, 2 P. M.

The meeting was called to order by the Chairman at 2 P. M.

The Chairman: I will announce the committee that has in charge the matter of the co-operation with the Council of Horticulture, and since it is a matter that vitally affects this Society, and may or may not break some of its cherished traditions, I have thought it best to appoint men whom you have

chosen to have in their hands the welfare of this Society for the next two years. Mr. L. A. Goodman, T. V. Munson, and John Craig, and what they say we will try to do. We will now hear from Mr. Bassett on the "Marketing of Fruit."

The Chairman: I am sure that we are greatly indebted to Mr. Bassett. I am sure also that the truths he has been telling us, if they are bitter, they are for the good of our souls. See paper, page 60.

Mr. Richardson, of the National Apple Shippers' Association, is here, and we would like to have a fraternal word from him.

#### DELEGATE INTERNATIONAL APPLE SHIPPERS' ASSOCIATION

F. H. Richardson, Kansas City.

Mr. Chairman, Members and Friends of the American Pomological Society:

It affords me great pleasure as a member and representative of the International Apple Shippers' Association to be with you, and I wish to say in their behalf that we should like to keep in close touch with you. One cannot get along without the other; you to experiment and study what the world would like best to eat and we to find markets and distribute to those that you try to please.

It afforded me great pleasure last evening to hear the representatives of your Society, from the different States speak of the advancement of the fruit industry of their States. Having been in the fruit business for a good many years, I know only too well the great advancement in the different States, also under the difficulties with which you have had to contend.

I have noticed in the last ten or fifteen years that Kansas, Missouri, Arkansas, Texas, Colorado, California, Washington, Oregon, Utah, and Texas are making the most rapid strides in the production of fruit, in this, our great United States, and in behalf of the International Apple Shippers' Association, let me say that we also have made advancements in the distribution of the fruit grown in these different States. I will say that we have members in our Association that have large orchards of apples, peaches, and other kinds of fruit that are interested in Pomology. We try to encourage that kind of fruit which meets the people's wants; that which is more profitable for the growers, more pleasing to the eye and most pleasant to the palate and the commission man can help you to determine what the world wants. We come in contact with fruit that is both beautiful and fine in flavor, but will not stand transportation and again we find fruit that stands the shipment, has the color, but not the flavor.

This is well for you to know and the sooner the better, before too much time and money are spent in improving something, that when raised is not profitable to the grower or shipper.

You have heard it said, probably, that this Association is framed for the purpose of fixing prices, only those that are ignorant will believe that such a thing can be accomplished where there are so many different States growing the same kind of fruit, freight rates different and the competition to get the best goods and the fluctuation of the markets it is impossible to do so. Supply and demand rule the price, not the growers or the shippers. No better illustration of this could be given than the great apple crop of 1896 and the present year.

I cannot go into the details of what we are doing, but will say that we try to get cheaper freight rates to the different markets, as our cities grow in the different States and the consumption of fruit is larger and we find that by getting the railroad to give a better rate we can increase this consumption, and

let me say right here that our railroads are helping us all. They like to see these arid deserts spring up with orchards along their lines. They are vitally interested in having hundreds of cars of fruit to haul. The Santa Fé, the Union Pacific, and other great roads have noticed how you have proved to them that you can raise the delicious fruit along their lines: this, they show by the papers, pamphlets, and magazines they publish and distribute over the country.

I am sorry that I have not a few of our yearbooks to give you that you may read what we do and the different subjects that are brought up, which are along your line of work. We also meet to ascertain where the fruit is grown; the development of the West is so rapid and great that it is necessary for us to know and get the reports from the different States as to the production of each State, so that we may know where to go for our supplies.

I might suggest that a good work could be done by the State Horticultural Society to have a list compiled about every five years of the growers of fruit, their address, the number of trees, age, and the number of acres of other small fruit, and have this in pamphlet form so that it could be distributed to the shippers. I have inquires every day, now, from buyers wanting to know where they can get their supply of apples. As you are well aware the crop of apples is scattering this year. The cause of this scattering crop, I know this Society is studying.

A little information I might give in the way of how scattering the largest producing counties of apples in the United States and will say we have twenty counties having over 500,000 apple trees in each county, distributed as follows: Arkansas three, Colorado one, Illinois four, Indian Territory one, Maine one, Missouri four, New York five, and Virginia one.

In conclusion, in behalf of the International Apple Shippers' Association, I thank you for the kind invitation to be a representative at your meeting and hope that you may send representatives to our next meeting, which will be held in Niagara Falls, New York. Our president, Mr. D. O. Wiley of Detroit, and secretary, Mr. A. Warren Patch of Boston, Mass., will be pleased to take up any correspondence relative to the time of our meeting.

## CO-OPERATION IN THE HOOD RIVER VALLEY, OREGON

M. M. McDONALD, SALEM, OREGON

Co-operation in the growing, packing, shipping, and marketing of fruit is well exemplified in the success obtained in Hood River, Oregon, where practically all the fruit products of that famous valley are packed, shipped, and marketed by an association of the fruit growers. Reports just to hand state the entire apple crop of this valley has already been contracted to New York buyers at a highly remunerative price to the growers. This fruit will be carefully and uniformly packed by the Fruit Union, and each box in itself will be an advertisement for the careful painstaking methods pursued by these wide-awake fruit growers.

The conditions are not so very different in the Hood River Valley from other sections where fruit growing is followed by the majority of the people, and what has been accomplished by them can be put into effect in other places. The success obtained by the Hood River growers can be traced to the foresight, push, and energy of a few of the enterprising citizens who early located in this valley, and notable among these is the Hon. E. L. Smith, now president of the

Oregon State Board of Horticulture, who has made the study of fruit growing a life work; and who has given to this little valley the advice and experience of a master mind in the propagation, cultivation, spraying, packing, shipping, and marketing of fruits.

The visitor to Hood River is at once impressed by the sameness of thought expressed by all the people on the subject of fruit growing, and with what zeal they impress upon the newcomer the superior quality of the fruit grown by them; also the necessity and importance of keeping up the standard already obtained. It seems to be the business of everyone to see that each new man is correctly versed and thoroughly grounded in the correct methods of producing the particular class of fruit which he engages in growing; fruit that is not only equal in quality to that grown anywhere else, but that will be superior when it reaches market on account of the great care exercised in propagation, packing, etc.

Strawberries and apples are the two leading fruits upon which these people have centered their energies, and who has not heard of the Hood River strawberries, the Spitzenbergs and Newtown apples? Yet it was not without a struggle that the fruit growers of Hood River attained the success they now enjoy, and were it not for the fact that a few energetic citizens kept the subject of co-operation continually before the people, this now rich and prosperous little valley would not enjoy the fame and prosperity it does to-day.

What has been done in Hood River can be done elsewhere, providing the growers are willing to unite for the common good of the whole community upon the question of co-operation and correct methods of producing fruit, as well as packing, shipping, and marketing.

## THE OUTLOOK FOR APPLE AND PEAR GROWING IN NEW MEXICO

By Parker Earle, Roswell, New Mexico.

In discussing apple and pear culture in New Mexico, which the title of my paper calls for, I would by no means intimate that the other fruits of temperate climates do not succeed as well as the two which I have named. For they do. There is no country of the world where finer peaches are grown than in our mountain territory, and their future commercial importance is possibly very large. It is equally true of the European class of plums, and of the European grapes. But the limits of this paper forbid my considering these delightful fruits, the true story of which must wait for some future occasion.

Orchard fruits are grown in New Mexico, mostly in small orchards, between the altitudes of a little over three thousand feet, to a little over seven thousand feet. But the most important orchards are a little less than four thousand feet above the sea. Here, in the neighborhood of Roswell, are many apple orchards of modest size,—from five to forty acres,—but only one planned on the ambitious scale sometimes seen in the Central States. The oldest orchard here is twenty-five years planted. The pear orchards are all small—the oldest trees being less than twenty years.

But enough has been done to establish the possible commercial importance of both of these fruits. This possible importance appears not because there is an added million of acres to the vast area in America where apples—and sometimes pears—can be grown, but because of new and better conditions here than can be found in any of the old States.

I am not speaking of soils. We have good soils for orchards in all of the States. The mountain soils of the East, the bluff soils of all the great rivers, and many of the broad plains, furnish ideal locations for apples and for pears.

But I am speaking of climate. *Climate is the one imperial factor in fruit growing.* You may have all knowledge, and the best of all the soils of the earth, and possess every energy, if you have not climate, you are wanting, and you will never achieve the best results in fruit growing.

Nearly or quite all of the diseases, and many of the insects which injure or destroy fruit trees, or the fruits themselves, are born of climatic conditions. In the humid climates all these pests reach their maximum development. As we leave the humid atmospheres of the old States and rise to the great upland plateau at the foot of the Rocky Mountains, we find a semi-arid climate, where the air is almost always dry, where there are more than three hundred days of sunshine in every year, and we find we have left behind the most serious difficulties which attend fruit growing in lower altitudes. We are at once emancipated from that long train of ineradicable evils that swarm in all moisture-laden air.

I am stating the one great basic fact upon which all fruit growing rests. *It is a question of climate.* Where humidity prevails, all kinds of fungi which attack trees and fruits will always be found. These fungi are the moulds, mildews, rots, scabs, and blights which are constantly present in moist climates. They are practically incurable evils in every district where the rainfall is sufficient to grow our common crops. We can wage a hopeful warfare on insects, but we cannot conquer the millions of microscopic foes that are born of the very air that feeds our trees. When we gain climates where the predominant conditions are arid, we escape from all these broods of troubles. Everywhere on this continent, and in all continents, the dividing line between healthy fruit trees, with clear-skinned, handsome fruits, and trees covered with lichen and scab, with mildewed and rusty foliage, *is the line of aridity.*

The two great valleys of New Mexico, the Pecos and the Rio Grande, which are more correctly described as broad elevated plains bordered by distant mountains, have an altitude of about four thousand to five thousand feet. We have an annual rainfall of from ten to fifteen inches, and we must have irrigation to grow crops. The soils are fertile, strong, and enduring. And in them with plenty of water we grow magnificent trees, which bear great crops of magnificent fruits, of such beauty and excellence as have not often been combined since the days of Paradise.

The first thing that attracts the attention of a tree grower who goes into a New Mexico apple or pear orchard, is the cleanness of the trees, both in leaf and bark. The bark of old trees is as clean as on nursery stock—no lichens, no moss, no scab. And the leaves shine—no rust, no premature falling. They are as green and bright in October as in June. Hence the fruit always matures, has fine color and full flavor. We have spring frosts—lots of them—but our crops rarely fail for this cause. And we have no cold spring rains, which are so ruinous to good pollination in the rainy States. We are as free up to this time from all kind of tree borers and fruit destroying insects, excepting only the codling moth, as we are from destructive fungi.

I would have you consider how much these facts mean. There is a complete contrast in conditions between the old countries and the new. We may not always be exempt from all the controllable destructive insects, but our climate, our dry, germless summer air, will forever protect us from the far more serious troubles of the destructive fungi. Apple growing in the old apple

States is involved in an increasing multitude of difficulties. So far as we can see it will never be better. It is likely to be worse. It is founded in climate, and climates constantly grow poorer in all countries, where man has unsettled the balance of natural forces by deforestation of the land.

Our semi-arid, semi-mountainous climate is not dependent on forest conditions, but on the great uplift of the country, and the influence of high mountain ranges upon the winds that sweep the continent—conditions which are absolutely immutable. What climate we have we shall keep.

Good orchard management in the best places in New Mexico will secure good paying crops of apples and pears five years out of every six. In fact there has never been a total failure in twenty-one years since the first apple trees planted in the Pecos Valley began to bear. The same is true of pears, for the shorter time the trees have been planted.

Our good climate, with our good strong orchard soil, not only gives us unusual certainty of crops, as compared with most of the old fruit growing districts, but the quality of the fruit we produce is of still greater importance. If the fruits we grow were always to be covered with the scab, and other distressing and ruinous blemishes, what profit or joy is there in having crops at all? But on our great uplifted plains we are sure of an attractive clearness and beauty of complexion in all of our fruits; and with very high quality, as compared with the best standards; and with great perfectness of condition, if we keep the codling moth in check, which, unhappily, is an indispensable requirement of apple and pear growing the whole wide world over.

Now if the statements I make are based on actual facts, is not the outlook for growing these two fruits on a commercial scale in New Mexico, one of very unusual promise? We have the strong mineral lands like those at the East, whose fruits have made American apples famous over all the world, together with a climate, based on permanent physical conditions, which is healthier for orchard fruits, as well as for men who grow them, than any eastern district of America ever knew. The largest apple orchards in the world are growing in the Mississippi Valley States. But the best apples for the markets of the world have never come, and will never come, from the soils and the climates where these wonderful orchards are growing. There are other staple crops in which these great States surpass the whole earth. But in the greater wisdom of the years to come the men who plant the orchards that are to supply the markets of the globe, will seek not only the best of soils, but the best of climates in which to grow them. And where will that be? Most certainly not in the richest grain lands and grass lands and cotton lands ever cultivated by man. But they will plant them on the broad high plains, and in the mountain valleys, where God has winnowed all the winds that blow, of every destructive germ that attacks the health of fruits and of man.

It needs no argument to show that in that happy day when all the "fittest" orchard men have survived the wrecks and losses of unsuitable conditions, they will finally find the best soils under the best climates in which to grow the surest crops of the most perfect fruits to meet the wants of mankind. And these soils will mostly be found away up towards the top of the American continent, of which New Mexico is a most inviting portion.

Doubtless the most important fruit of the world is the apple. It is the fruit of all seasons, and all temperate climates. It is the necessary fruit of civilization. It adorns the rich man's table and is the delight of the poor man's cottage. It is indispensable to all wholesome modern living. We cannot live and be healthy without apples. The laborer's lunch basket and the

school boy's dinner pail would lose their chief charm if the apple crop should fail. A loss of the American apple crop for one year would increase the mortuary records of nations. If our apple orchards should die the race would degenerate. In financial importance it leads all the fruits of the world. The money value of the American apple crop approximates—perhaps surpasses—a hundred million dollars.

There are half as many apple orchards as there are farms in America. And yet the fruit I have yoked with the apple, in my subject, can stand proudly with it in its importance to all those lovers of luxury who delight in the most exquisite flavors. If the good man who long ago wrote the notable lines about the strawberry—"Doubtless God might have made a better fruit than the strawberry, but doubtless he never did"—had been writing in these days of Howells and Hardys and Seckels and Superfines and Frederic Clapps, he would have substituted the nobler fruit for the fragrant berry. *The best fruit in the world is the best pear in the world.* The pear is the supreme triumph of the pomological artist. Ever since the days of Pliny—and I suppose long before—the ambition of the garden worker has been to improve the pear. Our modern pears are the splendid result of more than two thousand years of scientific breeding. And the work is worthy of all these centuries of labor. We can now have pears—in a country which the Lord made to grow pears in—for three-quarters of the year. We can have them of the most delightful quality—absolutely unrivalled by any other fruit of the earth—from July until April. I say this is possible. But it is not a common happiness. Beginning with the Tyson and running the course of the most delicious varieties through to the P. Barry, there are some two dozen kinds, ripening in succession—each of which seems better than any of the others—that fills out nine months of the year with an unbroken series of varied table delights. All this is possible to the man who tries, and tries right, if he lives in the right place.

Are any of the tables of kings set in this way? I thing so. But they mostly live about Rochester, or around Boston? And this royal living can be had in New Mexico. It is coming. But it takes a few years.

It is estimated that there are about one hundred apple trees growing in the United States to one pear tree. I exclude the Keiffer and Le Conte from this estimate, as the fruits of these trees do not class with the excellent table luxuries I have been suggesting. If this estimate is anywhere near correct, then the disparity in the supply of these two essential fruits is far too great, and much money will be made in correcting it. A hundred apples to one pear! Surely this should not be so. But the facts are even worse than this for the winter season, because fully nine-tenths of all the good pears we have ripen during about two months of the season, and at a time when peaches, plums, and other fruits of summer are in abundance.

This all being so, how poorly are we supplied during the autumn and winter with this choicest of table fruits? We have, perhaps, one bushel of good late, or winter, pears, to one thousand bushels of winter apples. We all know that fine delicious winter pears are rarely seen in the markets, and that they sell for prices which only the rich can pay. Why are there not more of them? Here seems to be an enormous waste of opportunity. It cannot be wholly credited to the oversight of orchard men. The only answer that has been made to my oft asked question is *The Blight*. The blight is certainly the unconquerable terror of orchard growers. I know it well. I have seen it run through my own orchards like an inextinguishable fire. It drove me out of the good State of Illinois, through the purgatory of Mississippi, into the celestial uplands of New

Mexico. I deeply sympathize with all those who remain in the stricken territory. But I bring you a word of hope. *There is no blight in New Mexico.* It has had a chance for twenty years. But not the least germ of this virile poison has ever been seen in our orchards. Not a twig, or a leaf, or a blossom has been blackened by its deadly kiss, so far as I have seen or heard, in all our territory. Again the climate! Or is it our alkali soil? I know not, but I do know that we have no blight. And this demon stands not in the path of the New Mexico pear grower.

Now if it be true, as I believe, that the American people appreciate good pears, and will always buy them when they can get them; and that they would have an equal relish for them in the winter as well as the summer; and that they would pay quite as much or more for them at that season, as they do in summer when other fruits are plentiful, then it seems to me certain that more than one bushel of winter pears to ten of summer pears should find a good market. And that much more than one bushel of winter pears to one thousand bushels of winter apples would sell at a profit. In fact I believe that the growing of late fall pears and winter pears is an excellent business proposition.

But as the Nemesis of blight stands threatening all pear planters in the old States, and is desolating many districts on the Pacific slope, there seem to be but few well fortified and tranquil spots on the planet which produce, with a great deal of security, that highest priced and most delightful luxury of modern tables, the high class winter pear; and that the best of these is in the happy Territory I have been commending to your favor.

We can grow as many tons of apples to the acre in New Mexico as you can in Missouri, or Massachusetts, or New York; we can grow as good apples; we can grow more crops in a given term of years than you can in either of these excellent States. We can grow as many tons of the best of pears to the acre in New Mexico, as we can of apples, and we will have as many crops in the given term of years.

A forty pound box of our pears is worth as much on the average as a barrel of apples. If the pears are of the best class of late pears, as the Danas Hovey, the Worden-Seckel, the Winter Nelis, the Winter Bartlett, or the P. Barry, they will be worth twice as much as the barrel of apples. So a ton of the best late pears will be worth some eight times as much as a ton of winter apples. This is why I am advising my friends to plant winter pears in preference to winter apples, even in this supremely good winter apple country.

We have many good things in New Mexico. We have soil, and sunshine, and the cleanest, sweetest air that blows. We have health and we have great opportunities. But we need more of some important factors to make things go. We need men and money; men with money. We need men with a zeal for orcharding, and with practical knowledge of it. Men with ambition to do something worthy. For such men there is a perpetual and ever-greatening welcome, and, as I believe, the grandest of all orchard opportunities.

I wish that my honored friend, the distinguished President of this noble Society, was located in New Mexico, with all of his quarter million—or maybe it is now as much as a half million peach trees—and that the peach trees were all apple trees, or still better, that they were pear trees! Then other robust men with stalwart fruit growing energies would come too. And then would New Mexico come into her own proper pomological glory. She would lead the world in producing the two grandest fruits that make richer the lives of men.



## PRINCE EDWARD ISLAND, CANADA

By Rev. Father Burke, Vice President, Alberton.

Quite recently only has the Island Province of Canada become known as the producer of choice fruits. On a placard high up on the main column of Canada's grand trophy in the Horticultural Building, St. Louis, last September, we were glad to read: "Prince Edward Island, the Island Province of Canada, has already demonstrated that the best and longest keeping apples are grown successfully within her borders."

We go back a decade and a premier of the Province in Parliament, in our capital town of Charlottetown, declared in public debate that it was absurd even for us to talk of growing apples fit to eat or ever to attempt commercial fruit growing.

All this is changed. Everybody is proud of the fact that we cannot only grow fruit, but the best of fruit—best colored, flavored, and longest keeping. It had long been a principle with pomologists that the farthest northern limit in which apples would grow, there they would excel all others in these qualities we have indicated.

Organization was effected for the fruit interests of the Island through its Fruit Growers' Association—a recent creation, but as live and enterprising as any of the older ones. Of course its work is only well commenced. There will be much to do for many years—as long as the fruit interest is maintained.

Apples compose the great bulk of the fruit so far raised, but superior plums and pears are grown and a full line of small fruits and berries. The Island completes the strawberry circuit, its quota going forward in late July to crown the season's operations in the great cities.

There is a surfeit of early apples at present. Like all new fruit producing regions the tree agent found it easy to unload a lot of such stock upon the unsuspecting Islander; now that it has fruited they know that it is not what is wanted to be either useful or profitable. Canning and jamming use some of them however.

The whole Province will grow apples. Professor Macoun is authority for the statement that every inch of it will produce fruit—either apples or cranberries. But of course commercially the interest is hard to organize, there being so many small plantations and so many mixed varieties. Co-operation is the only remedy in view.

A catalogue of fruit for the use of planters published by the Fruit Growers' Association gives the following varieties as well adapted to the Island: Alexander, Baldwin, Baxter, Ben Davis, Blenheim, Canada Red, Fameuse, Gravenstein, King, McIntosh, Mann, Northern Spy, Oldenburg, Ribston, Russet, Stark, Tolman Sweet, Transparent. The Gravenstein is a month later than in Nova Scotia; as good an apple and likely to carry so much better to Britain.

Prince Edward Island is at the doorstep of Britain, so to speak; and, therefore, has a great advantage commercially, for Britain is the best apple market in the world. Already have we tempted this market and found it most satisfactory. "We will take all the fruit you can grow," they say in substance.

This country, new to orcharding, has few orchard pests. The San Jose scale is unknown; even the codling moth is not very widespread. Our orchardists are taking time by the forelock and using Bordeaux extensively. The fruit is clean and of a particularly captivating bloom.

We have had the advantage of the horticultural instructors of the Department of Agriculture, Ottawa, and they have done much to improve methods and demonstrate in all the operations of fruit growing. They will be required for many years to come in the same capacity. The "Individual Visitation" plan originated here.

On the whole the outlook is bright for the fruit industry in this province, and we will earnestly consider anything that the great American Pomological Society can offer to advance this interest in even so remote a corner of the land it pledges itself to benefit by scientific research.

#### WHAT THE OFFICE OF PLANT INTRODUCTION CAN DO FOR AMERICAN POMOLOGISTS.

By David Fairchild, Agricultural Explorer in charge of Foreign Exploration,  
Department of Agriculture

Almost all of the plants in which American Pomologists are especially interested have been introduced from foreign countries. Their introduction has been left largely to the initiative of individual enthusiasts scattered over the country or to branches of the government which were not organized especially to do this kind of work.

That much has been done by individuals is attested by the successful plant cultures now carried on in this country, but I doubt if many American Pomologists have paused to think what the results might have been had the efforts of individuals been supported by a thoroughly well organized government office whose duty it was to secure the desirable plants from foreign countries and get them into the hands of interested experimenters whose private means were too limited to enable them to import the plants themselves but who would have been glad to spend their labor and attention and devote the necessary land for trials of the new importations.

In 1897 Congress established such an office in the Department of Agriculture and although it has gone through trying times of organization and re-organization and has been scantily supported by funds, it now represents the framework of what such an organized aid to Pomologists and Agriculturists should be.

Any government office should represent a public want and be so planned that the public should get a full return for the funds expended in its maintenance. The Office of Seed and Plant Introduction and Distribution of a necessity originates plans of its own which in the opinion of those in charge are destined to benefit American Pomologists, and a great share of its funds is used in carrying out these plans, but it is after all with the practical growers that many of the most important plans have originated, and from the individual experimenters that the encouragement comes to continue them. The suggestions of most value must generally come from those who know by long experience what the country wants, for in plant introduction, as in plant breeding, the most important point is the objective point.

The formation of collections of interesting plant curiosities we propose to leave to botanic gardens and institutions which have not to keep the practical standpoint so fully in view. Our aim is to spend the public moneys in the care of such plants as have promise of value for American Agriculture and Horticulture.

These may give promise as new industries, such as the Corsican citron, the Sahara date, the Levantine pistache, or the East Indian mango.

They may be promising for stock on which to graft, as is the Mexican pear stock, or Tijocate, the new French resistant vine stocks, or the Canary Island avocado. They may be improved strains of species now grown in this country, such as the Tanaka loquat, the seedless Siamese pomelo, the Jordan almond, or the Bahia Naval orange.

They may come from regions with a drier, colder, or otherwise more trying climate than that into which they are introduced and prove better than the native sorts in their resistance to druth or cold, as have proven the Russian apples in the Northwest and the Japanese plums in the Southwest.

They may have value solely for breeding purposes, but in this respect alone so many apparently indifferently useful plants have proven of great value after their introduction that this branch of introduction work may almost be said to be the most important of them all.

The improvement of native fruits by selection is one thing, but the creation of entirely new fruits by hybridization is quite another. While in the former no admixture of foreign blood is desired and the selector is independent of plant introduction, in the creation of new hybrid fruits the whole world is none too large nor has it any too wide a variety of fruits to choose from. It is in the importation of plants for those American Pomologists who are creating new races and hybrids that the office which Mr. Pieters and I represent, hopes to be of distinct and direct service to the country.

Luther Burbank's surprising hybrids are admixtures of species from all over the world. His Raspberry-Blackberry hybrid has a Siberian Raspberry mingled with Western Dewberry in it. His remarkable walnut is a cross between the Persian or English walnut and the California species. In some of his plum creations he claims to have mixed the blood of six distinct species. Swingle and Webber's new citrange is a remarkable hybrid between the Japanese hedge plant (*Citrus trifoliata*) and the best Florida Orange.

The Chinese cling peaches, whose importance to American Pomology is well understood by you, are all the result of selections from seedlings of introduced Chinese peaches. Whatever our opinion may be of the value of the Kieffer and Le Conte pear varieties the fact remains that they owe their remarkable vigor and freedom from certain diseases to their blood relationship with the hard-fleshed, tasteless sane pears of Japan.

The office is now importing for California vineyardists, hybrid resistant stocks which the enterprising French viticulturists have created by crosses between our American grape, *Vitis rupestris*, and the European, *Vitis vinifera*.

The Orient has brought to America so many valuable plants of use as ornamentals or for food that Pomologists are prone to look upon its resources as exhausted. The fact has been brought out recently however, that many of the remarkable Japanese introductions which are not hardy in the severe climate of the Middle West are represented by close relatives in Northern China, where the thermometer probably drops almost as low as it does in Kansas and where open winters with intermittent freezes and thaws subject vegetation to as trying conditions as does the climate of our own continent.

Dr. Sargent, of the Arnold Arboretum, whose explorations in China and observations on Chinese plants in the Arboretum have made him an authority on the subject, states that in his opinion America has lost much time by testing varieties of Chinese plants whose constitutions have been distinctly weakened by their long sojourn in the mild, rainy climate of Japan.

Many close relatives of Japanese plants which have not succeeded in the New England States will, he believes, be found in North China with constitutions much more capable of withstanding the severities of our trying climate.

To find and get what there is in this promising region we have sent out an Agricultural explorer, Mr. Frank N. Meyer, whose training under Dr. Vries, the noted Dutch botanist, has prepared him to quickly distinguish slight variations in plants, and whose long tramps in this country and in Mexico have peculiarly fitted him for explorations in a country where roads have practically no existence and the ways of communication are footpaths and canals. Mr. Meyer is a trained gardener with the love for plants which makes them respond to his touch, and every facility has been afforded him with the hope that he will develop into a second Fortune and send to this country a quantity of most valuable things in quantities large enough for quick propagation and distribution among the pomologists and agriculturists of the country.

The funds of the office this year will not permit us to keep in the field more than one explorer, since the cost of caring for and propagating the living plants, and of distributing them, consumes far more money than that used in the work of bringing them to this country.

It is expected that these explorations in Northern China will yield more interest to the American Pomologists than any yet undertaken by the office, and if there should be anyone who through reading or correspondence has had revealed to him some new or interesting Chinese plants worthy of Mr. Meyer's attention, a letter to the office describing them would be promptly placed in his hands for his consideration.

In addition to Mr. Meyer, our paid explorer in China, we are expecting voluntary aid from Mr. Jack, of the Arnold Arboretum, who is now in Japan recuperating from too close work at his post.

Mr. W. A. Hart, a wealthy resident of Brookline, who has become interested in plants, through Prof. Sargent, expects to make a journey up the Yang-Tse-Kiang as far as Chung King this autumn, and he has volunteered to collect seeds and plants and has been supplied with an honorary commission to aid him in the work.

Professor Roland Thaxter, of Harvard, has also been given such an honorary commission for his trip around South America, upon which he has just started, and it is hoped that his explorations into Peru, Chilli, and Patagonia will unearth some valuable varieties of fruits or vegetables that will be of use to our Southern Pomologists.

A glimpse at the recent activities of the office may interest the members of the Society although they are unfinished lines of work. Four co-operative date gardens in the Southwest represent the distribution of several thousand date palm suckers which the office has collected through explorers in Arabia, Algeria, Tunis, and Egypt. Several of the improved sorts will ripen fruit this year, and some have already yielded good fruit.

At our well-equipped Plant Introduction garden at Chico, California, under the able management of Mr. P. H. Dorset, have been gathered thousands of pistache trees, collections of figs and capri figs, the plants of the Chinese Yang-taw (*Actinidia chinensis*), a collection of new Japanese lotuses, one of which a semi-double, has already flowered and is promising. the wood oil trees from the Yang-Tse Valley, a large collection of edible fruited and forage opuntias from Tunis, Malta, the Riviera and Mexico, a large number of selected sorts of the Japanese flowering cherries, a collection of Japanese bamboos, and very numerous small quantities of new fruits like the Natal Amatungula and the Kaffir plum.

Over a hundred varieties of mangoes, collected from India, Java, the Philippines, East Africa, the West Indies, and the Marquesas have filled our propagating houses, and under the skillful hands of Mr. Oliver have been inarched and distributed to Florida, Hawaii, Porto Rico, Cuba, the Isle of Pines, and the frostless portion of Southern California.

A wardian case from Java has successfully brought to the propagating houses the Ramboetan and the Doekoe, two delicious Malayan fruits which have not yet been introduced into the West Indies, the former (*Nephelium mutabile*), related but superior in flavor to the Leitchee, the other Doekoe (*Lansium domesticum*), a Meliaceæ, of promising possibilities.

From Canton, the home of the Leitchee, wardian case shipments are now on the way containing grafted varieties of this fruit which were ordered at our recommendation for the experimental grounds of the Arlington Heights Fruit Co., at Riverside, California. Snows have sometimes fallen in Canton, and the Leitchee may prove hardy enough for the small practically frostless zone of the state, and experiments have been encouraged by the importation of seeds from the locally noted Afong leitchee tree in Honolulu.

Porto Rico, the most favored tropical fruit country in the world, separated by only four days ocean freight from New York, is being encouraged to grow such strictly tropical fruits as the Mangosteen, queen of all tropical fruits. To this end seeds, not only of this species (*Garcinia mangostana*), but of as many related species as could be obtained, have been imported and propagated which may prove valuable as stocks upon which to graft the delicate rooted Mangosteen.

Anyone who will take the pains to study historically the work of the last century in plant introduction in America will realize that the plans which are being carried out by the Office of Plant Introduction are following lines which will lead to the careful recording of every new government introduction.

Every new seed or plant introduced is given a separate inventory number which it bears in our records as long as it is under consideration. Of every seed sent out it is recorded to whom, where, and when it was sent. Reports from time to time are arranged conveniently according to the inventory numbers, so that reference can be quickly made to them. The inventory is printed from time to time, and particular care is taken to give credit to every donor or collector of a new introduction.

In other words, we are striving to make of the office a central institution for the systematic distribution of new and valuable introduced plants, and the Pomologists of America will have only themselves to censure if they do not by suggestions, contributions of information and a systematic use of its advantages, help build it up into what it has all the possibilities of becoming—one of the most useful branches of the government service.

#### NOTES ON NEW FRUITS.

Col. G. B. Brackett, Washington, D. C.

Solomon said "There is nothing new under the sun," yet notwithstanding this wise saying the search for something new is one of the strongest traits in human character. From this unsatisfied discontent comes discoveries, inventions, development and progress in all affairs of life.

At no time in the history of horticultural science has there been such an effort to originate and improve our domestic fruits as at the present time. The rapid increase in the demand for choice fruit calls for something better than

we now have. The growing importance to the best interests of American horticulture commands the attention and intelligent efforts of those who are in position to achieve success along this line of pomological progress. When we look over the past history of the industry and note the radical improvements in all classes of fruits and the records which at the present time clearly present the possibilities of experimental endeavor, it affords us every encouragement for greater efforts to improve upon present conditions, which are mainly the results of Nature's methods for a continuance of species, as per chance, and not from care and intelligent effort directed to special accomplishments. In some classes there is a demand for improvement in certain features accompanied by a reproduction of qualities already possessed. As an illustration, take the Ben Davis apple which for nearly half a century has been the leading commercial variety over a large area of country. Here we find when well grown one of the finest types in size and beauty, and which seldom fails to attract the sight and admiration of the masses of people, but when tasted it is a disappointment for high quality is lacking. If this one requisite could be added to the other good features we would have a variety nearly perfect—an achievement which would immortalize the man who accomplished it. Then, take for instance the Seckel pear which possesses every point desired in tree and the highest excellence in fruit. Its small size militates against it as a commercial product. Give it the size of Bartlett and in its season it would command the market. The Snyder blackberry with its remarkable hardiness and heavy fruitfulness—but lacking desirable size and quality—gives very little satisfaction to the consumer. Continue these citations through all classes of fruits and you will find the same conditions. Enough has been given, however, to demonstrate the character of the work needed and desired in improving the already advanced condition of our fruit production.

Here the question arises: By what means can we accomplish such improvement? By intelligent and direct methods of *selection* and *breeding*. This requires a scientific understanding of the process of pollination under Nature's laws and a thorough knowledge of the constitution and functions of plant life. The larger number of varieties now on our lists of cultivated sorts are selections from chance seedlings and not the results of any scientific efforts to originate new varieties by systematic breeding with definite objects in view.

How many of our choice varieties now under cultivation have been produced by breeding? Hardly any. And is it any wonder that such is the case when we consider how meager are the efforts put forth by those from whom we should expect greater things. How many of our heavily endowed experiment stations have taken up this line of work? Never was there a greater opportunity offered for the experimenter to achieve most wonderful results in originating new and valuable fruits along the path which science has mapped out. The explorers are alert in the field in search of old things in foreign countries with a view to introducing them into this country for trial, but a large proportion of these foreigners do not prove to be adapted to their new environment. The great need is for live, energetic workers along the line of improving the fruits which we already have through breeding for definite characteristics as already indicated, namely: quantity, quality, vigor, hardiness, productiveness, adaptability, immunity from disease, etc., with a view to combining as many of these qualities as possible in one variety.

So far as I know, the first authentic records we have of artificially produced hybrids was by that wonderfully foresighted fruit grower, Mr. Thomas Fairchild of Hoxton, England, who produced the Johnson's Early grape in 1717, and a

cross of Codling and Pearmain apples a year or two later. To that date all had been left to Mother Nature, and the comparative anatomy and physiological structure of fruits had received but slight consideration. But the work was taken up a few years later by Linnæus and Thomas Andrew Knight. Thus it will be seen we have infinitely greater advantages than had our forefathers. We can scarcely place limitations on the possibilities of this work. It is of great value to connect the scientific with the practical. Some very distinct genera cross with ease, while some closely allied species refuse all attempts at unity. The production of hybrids in nature is largely a question of opportunity. We do not need so much new varieties with new names, but improvement of the types we already have. The great business proposition is that values can be increased at slight expense.

The Department of Agriculture has recently taken up this line of work, and some valuable results have already been accomplished. The experiment with the citrus fruits carried on by Professors H. J. Webber and Walter T. Swingle, of the Bureau of Plant Industry, has resulted in the production of a hybrid which has been named Tangelo, a cross between the ordinary Pomelo (female parent) and the Dancy tangerine (male parent). Also a new fruit named Citrange, a hybrid between the common orange (used as the female parent) and trifoliolate orange (used as the male parent). The object of this experiment was to obtain a hardy orange, with a view to extending the citrus belt farther North. The details in regard to these new fruits cannot be given in this brief paper, but they may be obtained on application to Prof. H. J. Webber, Department of Agriculture, for a reprint from the yearbook of 1904, entitled *New Creations of the Department of Agriculture*. Prof. Webber is also experimenting with the pineapple to obtain better shipping sorts, smooth leaved varieties, sorts resistant to disease and having larger fruits and of better quality. Prof. Webber has originated a great number of hybrids of the pineapple, some of which are very promising.

As already stated *selection* has played an important part in giving us many of our choicest fruits. In their untiring and continuous search for promising fruits, the Messrs. Stark Brothers have discovered some valuable seedlings, one of which is especially deserving of more attention than it has yet received.

#### DELICIOUS APPLE

Although comparatively new it has been tried and not found wanting over a wide area of country, even as far west as California and Oregon. It is rightly named Delicious. It originated in Madison County, Iowa, not far from Des Moines. The original tree came up as a sprout from the stump of a Yellow Bellflower that had been destroyed. The sprout was about six years old when it first fruited; the quality of the apple was so fine that the owner, Mr. Jesse Hyatt, at once set some grafts from it, as well as cultivating the original sprout, which soon began to make a very strong, thrifty growth. At 15 years of age, the tree was 13 inches in diameter at the ground. The tree is of upright growth, with heavy dark green foliage. It has proven extremely hardy; it bears annually and yields large quantities of beautiful, delicious fruit.

*Description*—Large, roundish; basin regular, large, deep; eye medium; surface smooth except the ribbing; yellow washed with mixed red, broken stripes of purplish crimson; dots numerous, small, yellow, indented; bloom whitish; flesh yellow; texture fine, medium, tender, juicy; core conical, small, clasping; seeds plump, small; flavor sub-rich; quality very good. Season, winter.

## EVELYN APPLE

This is one of the most promising new fruits especially adapted to the climatic conditions of the Northwest. It was originated by H. M. Lyman of Excelsior, Minnesota, from seed of the Wealthy planted in 1876. The tree is somewhat spreading, with large healthy foliage, and is productive and the fruit hangs well to the tree.

*Description*—Large, roundish; cavity regular, medium, deep; stem  $\frac{3}{4}$  inch in length, slender; basin regular, small, shallow; calyx small; surface slightly undulating, smooth with occasional marks of russet; yellow, washed with mixed red and broken stripes of crimson; dots minute russet; bloom whitish; flesh whitish yellow, texture fine breaking, juicy; core round, clasping, medium, open; seeds large, plump; flavor sub-acid; quality good to very good. Season, winter.

## BEDFORD SPICE APPLE

Although this valuable autumn apple has been grown for the past fifty years, it has received but little attention outside of the County of Somerset, Pennsylvania, where it was first known. Specimens of the fruit were sent to the Department of Agriculture in 1898 by Mr. O. P. Shaver of Friedens, Somerset County, Pa.

The only history of this apple obtainable is given by Mr. Shaver, who writes as follows:

"About 1850, Judge Michael Zimmerman brought scions of this apple from some point in Bedford County, Pa., and grafted trees on his farm in Quemahoning Township, Somerset County, Pa. Later, as the variety began to attract attention, other parties obtained scions from Mr. Zimmerman, and in this way the apple was spread largely over Somerset County. The apple commences to ripen in August, and continues to ripen until picking time of winter apples, and when picked, the last of September, it has frequently been kept until the following April. In this respect it is peculiar."

*Description*—Form roundish, slightly ribbed; size medium; surface smooth; color creamy white, washed with mixed crimson splashed and striped with darker crimson; dots gray and reddish brown; cavity regular, large, deep; stem medium, slender; basin regular, medium, abrupt; eye small, closed; skin tenacious; core conical, clasping, open; seeds plump, medium, numerous, brown; flesh yellowish, fine-grained, tender, juicy; flavor sub-acid; quality very good. Season, autumn.

## KENT PEACH

Specimens of this new peach were received at the office of the Pomologist, Department of Agriculture, from Mr. L. A. Berckmans of Augusta, Georgia, on August 4, 1905. The history of its origin, etc., will be given later. After a careful examination of this peach at the office, it was considered one of the best of the new introductions.

*Description*—Medium size, oblong, oval, conic, suture deep; yellow, blushed, marbled and striped with purplish red; skin medium thick, tenacious; flesh yellow, deeply stained; stone oval, cling; flavor sub-acid, rich; quality very good.

## GRAVES PEACH

Original tree bought with a lot of seedlings received from a local nurseryman, and set out on the farm of W. J. Graves about  $1\frac{1}{2}$  miles from Lake Erie. Tree bore its first fruit three years later, 1892, and for four years successively it bore, some of these years of which fruit was scarce on other varieties. In the large orchard the trees were conspicuously noticeable for they were loaded with luscious fruit. The peach seems precocious, as there is a report of one man who



had peaches from a tree of this variety—two peaches—from the tree the first year in nursery row.

*Description*—Roundish; size medium; suture deep; surface soft, velvety; yellow, nearly overspread with dark crimson; dots pink; skin thin, tenacious; flesh yellow, stained red; texture tender, melting, juicy; stone oval, semi-cling; flavor mild, sub-acid, rich; quality very good. Season medium late.

#### TRINKLE NO. 4 PLUM

This is a seedling from Burbank plum, originated by Mr. John W. Trinkle of Madison, Indiana, who is making a specialty of plum breeding. The seed was planted in the spring of 1897 in nursery or trial rows where it still stands. It was cultivated in 1897 and 1898, and then neglected until 1900, when cultivation was given it until the present time. The tree is of strong, symmetrical, spreading growth with medium stout wood; large, thick, leathery leaves of triflora type; it blooms a little later than Burbank. The fruit is evenly distributed on the tree. Its cooking qualities are pronounced of the very best, especially for preserves, requiring but comparatively little sugar.

Large; cavity regular, large, deep; suture medium; apex small, dot at end of suture; surface smooth; yellowish, covered over most of surface; dots small, yellow; bloom bluish; skin medium, thick, tenacious, slightly bitter; flesh yellowish, slightly translucent; texture meaty, moderately juicy; flavor mild, sub-acid; quality good to very good. Season, medium.

#### A NEW PRUNE

This has not yet been named. Specimens, both fresh and dried, were received by the Pomologist, Department of Agriculture, from Mr. W. V. Eberly, Manager of the California Nursery Co., on the 12th of September, and after examination of the fruit, I feel safe in saying that it is a most valuable acquisition in the line of prunes. The flesh is so firm that it will stand shipment a long distance in its fresh state, and for drying it would shrink very little. Mr. Eberly writes as follows:

"This new fruit is thought to be a seedling. The tree, as described to us is very much like the French Petite d'Agen both in shape, growth and bearing qualities. The party who has it, made the discovery seven years ago and he says it has borne every year since."

*Description* Size large; form long, oval; cavity regular, small, shallow; surface moderately smooth, with occasional patches of russet; golden yellow, translucent, with bronzed blush on exposed side; dots numerous, silver; flesh yellowish, translucent; white veins; stone long, flat, free; flavor sweet, rich, quality very good. Season September.

#### SEEDLESS FRUITS

The so-called seedless and coreless apple is now under investigation, and opinions as to its verity and value are freely expressed by the horticultural press all over the country. And now comes a new seedless grape for consideration. We already have the Sultana, Thompson Seedless and others, all of the *Vinifera* type, but the new candidate which has just made its appearance belongs to the *Labrusca* family, and so far as known, it is the only seedless variety of this class, therefore it is worthy of our attention. If our hopes and expectations of this newcomer are realized, we will have a most valuable fruit, one that will be adapted to sections of country where the *Vinifera* class will not grow. Who is there that is not fond of a good grape pie, or grape sauce, even with the seeds in? How much better would we enjoy these luxuries were the seeds eliminated.

We have just had the pleasure of examining this new grape, specimens of which were received at our office from Mr. E. H. Pratt, of Fredonia, N. Y., on the 13th of September, and we found them to possess all that was claimed for them. The berries are small, very dark skin, thin; juicy, sweet, rich, vinous; all the qualities for making a fine wine; not a trace of seeds could be found.

THE POMOLOGICAL INVESTIGATIONS OF THE UNITED STATES  
DEPARTMENT OF AGRICULTURE.

WM. A. TAYLOR, Pomologist in charge of Field Investigation,  
U. S. Dept. of Agriculture.

The pomological work of the Bureau of Plant Industry may be roughly divided into two general lines, namely, systematic and economic work, though in fact all the work thus far undertaken in this field has a definite economic relation and practical bearing. The term pomology, which has been variously applied by writers, may perhaps be most accurately defined as the science of fruits and the art of their culture. The science of fruits is largely concerned with the study of their relationships and the determination of their relative adaptability to various combinations of soil and climatic conditions. Only through knowledge of these points can any intelligent forecast of the probable behavior of a variety in a particular region be based, and the risk of failure of varieties in regions new to them, be reduced. One of the most important requisites in systematic pomology is an accurate, clear and stable nomenclature. This is necessary in order that the observations of widely scattered observers may be utilized in determining the cultural range of varieties, and the uses to which they are best adapted. In America this question of nomenclature has been and still is of very great importance. Our commercial fruit industry has been developed with such startling rapidity in districts so widely scattered, and from native and introduced species of such diverse characteristics that the workers in systematic pomology have been overwhelmed in the wealth of material available for, and needing their attention. In every new section, successively occupied by the pioneers as they moved westward, old varieties have reappeared under new or entirely erroneous names, which, mingled with those of the new sorts that have originated in the particular sections, have resulted in radical regional differences in the names of varieties in the nurseries and orchards.

A few familiar cases may be cited. The Baldwin apple of New England became Steele's Red Winter in Western New York, which name through a mistaken identification later became firmly attached to Red Canada in Michigan where it still persists in the older orchards. The Yellow Newtown of Long Island, transferred to the warm and fertile mountain coves of Virginia became the Albemarle Pippin of the mountain region below the Potomac River. The Munper Vandevere, of Pennsylvania, grafted in Northern Illinois for Yellow Newtown, became the Minkler of that State, and the great Mississippi Valley, and has been so widely distributed under that name, and so firmly fixed in pomological literature that it takes precedence over the earlier name of the variety; the Napoleon cherry of the European lists is almost universally grown in California and Oregon as Royal Ann; the Pond plum as Hungarian Prune. Systematic investigation of the apples grown in family orchard reveals the fact that a large proportion of the varieties in them, outside of a few standard commercial sorts, are either unknown by name to the growers or are incorrectly named.

This condition made it necessary that special attention be paid to the nomenclature and identification of fruits in the early years of the department pomological work. In coöperation with the American Pomological Society, the state horticultural organizations, and the horticulturists of the experiment stations, a fair degree of uniformity in the varietal names used in formal catalogues and volumes has been attained. A large number of public spirited fruit growers and nurserymen throughout the country have generously aided in this work, which is still in progress.

In connection with this work an invaluable collection of accurate varietal descriptions, photographs, watercolor paintings and facsimile models and herbarium specimens have been accumulated which constitutes an important feature of the working equipment of the office. The continuous policy of those in charge has been to assemble in this collection all varieties of fruits grown in North America, to which all workers interested in pomological questions may have access for the prosecution of their investigations.

Necessarily the identification of varieties from specimens sent by growers and others, has become an important feature of the work, the receipts for this and allied purposes having averaged nearly 3000 lots of fruit per annum during the past five years. Such work is recognized as having a distinct and immediate value to fruit growers, as well as a definite bearing on systematic pomological work, so that growers are, upon application, furnished with mailing packages and franks with which to forward specimens for this purpose.

Publications on particular fruits embodying the results of these investigations are in preparation. One, "The Nomenclature of the Apple" (Bulletin 56 of the Bureau of Plant Industry), was issued in 1905. This comprises the known varieties of this fruit referred to in American publications between 1804 and 1904, the first century of American pomology, and includes some 15,000 apple names and synonyms, with tabular description and reference to places of origin and first publication so far as determined.

Actual and supposed new varieties, whether yet introduced or not, are received in large numbers from originators and nurserymen for opinion as to their exact identity and their relative value in contrast with sorts already known, also for suggestions of suitable names not previously used.

Such work as this, in addition to a large volume of correspondence upon matters relating to various phases of the fruit industry both systematic and economic, makes up the distinctive office or indoor work in pomological investigations.

#### FIELD INVESTIGATIONS.

Since 1901, the distinctive field problems in pomology, most of which are of direct economic importance, have been separately grouped for convenience in administration. These comprise those lines which embrace experimental studies of problems connected with fruit marketing, transportation and storage, viticultural investigations, fruit district investigations, and a number of miscellaneous field problems.

Under the general head of fruit marketing, a systematic experimental study of the various questions involved in that subject is being made with special reference to its bearing on the development of export trade in American fruits. It is becoming very generally recognized that with such fruits as the apple, the pear, the peach, the orange, and possibly some others, the yield in favorable seasons in future is likely to be much larger than has been the case in the past.

A wider distribution of the product must, therefore, be accomplished if disastrous gluts are to be avoided. While the larger part of our fruit product will no doubt always be consumed in America, the export trade is recognized as one of the most important safety valves for surplus fresh fruits.

Series of shipments to British ports have demonstrated the entire practicability of delivering there in sound and wholesome condition, early summer apples, peaches and pears of the varieties best adapted to our domestic markets and at times when our surpluses of them are likely to occur. In a number of instances such shipments have yielded higher net returns than the home markets even in years of high prices at home. In the case of the Bartlett pear in New York, a large and in the main profitable, export trade has already developed along the lines experimentally determined and demonstrated by the Department.

The profitable exportation of peaches is considered a more uncertain matter, largely because of the fact that the peach is not yet sufficiently well known to the great mass of population in Northern and Western Europe to be in steady and large demand. The fact that in favorable seasons Elbertas from points as diverse in their conditions as Georgia, Oklahoma and Connecticut, have been delivered in London in good order, and have netted their growers values nearly or quite equal to home markets, is sufficient to indicate that the field is a promising one. Early apples, from those districts like the Chesapeake Peninsula, which can place their product under refrigeration in the foreign markets within ten days after leaving the tree, are worthy of further attention in particular localities, especially in seasons when the European crop of summer fruits and the Australasian crop of winter apples which come into competition with them are light.

But far more important than any of these is the export trade in winter apples. In all but our very lightest crops the export demand has in recent years been the most important factor in determining the prices of sound fruit during the autumn and winter. For this reason, particular attention has been paid to such questions as size and style of packages, method of packing, suitability of variety to market, etc., as well as to the introduction of American apples to markets where they have not hitherto been used in commercial quantities. Series of shipments of winter apples from representative apple sections, packed in barrels and boxes, both with and without wrapping, comprising both graded and ungraded fruit, are now being made to the principal European seaports to obtain actual experimental data on these vexed questions, which it is practically impossible for the grower to determine for himself except through long and frequently costly experience. Progressive reports of this work are given out from time to time through papers before associations, such as this, and will eventually be summarized in bulletin form for distribution.

#### FRUIT TRANSPORTATION AND STORAGE.

Under this head a comprehensive investigation of the entire question of the handling of fruits for transportation and storage has been in progress for the past four years. Experiments conducted with the more important commercial varieties of apples, pears and peaches, in some of the leading districts for those fruits, have demonstrated the necessity of picking at proper stage of ripeness, carefulness of handling, promptness of forwarding and withdrawal for consumption before the product has passed its stage of full maturity. Perhaps no fact developed in this investigation is of greater fundamental importance than this, namely, that the durability and value of fruit destined for cold storage

are as vitally affected and as surely damaged by careless handling in any stage of handling or shipping as in the case of fruit destined for immediate consumption. The loss in former case is, in fact, frequently greater than in the latter, because of the additional expenditure for freight, storage charges, etc., and the inevitable risk of deterioration before an opportune time for sale occurs.

To quote from the report on this work for the last season:

"The experiments during the four years have shown conclusively that a large proportion of the difficulties in apple storage may be overcome by more rational handling of the fruit before it is stored, and by giving it better care in some respects after it reaches the storage house. Apple scald, one of the most serious storage troubles, is not yet well understood, but the experiments have again demonstrated that it can be controlled commercially by picking the apples when hard-ripe instead of prematurely as many winter apples are picked; by storing them quickly after picking, in a temperature of about 31° F., and by selling the more susceptible varieties comparatively early in the season. The premature ripening of apples in storage is often the result of delaying the storage too long after the fruit is picked. These investigations continue to emphasize the supreme importance of quick storage after the fruit leaves the tree. The 'slumping' of apples in the barrels, due to the development of the common blue-mould fungi in the spring, is generally the direct result of rough handling of the fruit while it is being picked and packed. The skin of the fruit is bruised, and the rots enter and grow vigorously if the fruit is not stored quickly in a cold temperature after picking. The investigations continue to emphasize the need of uniform temperature as low as 31 to 32° F., for long term storage, and of pure wholesome air in the warehouse if the flavor of the fruit is to be retained without contamination. Cold stored fruits are frequently injured in quality through the lack of proper ventilation of the storage warehouse. This side of the storage question needs further investigation, which cannot be satisfactorily made until the Department has an experimental storage plant.

The effect of the environment under which fruit is produced upon its keeping quality in storage, is being studied experimentally with fruit from trees of different ages, in different soils and from different climates. In coöperation with the N. Y. State Exp. Station, a comprehensive investigation of the influence of various methods of culture, such as clean cultivation vs. sod culture, etc., is under way. The comparative value of a large number of varieties of apples from different apple districts has been studied for the past four years with the view of determining their relative fitness for storage.

During the past year a special study of farm storage houses has been inaugurated and will be continued for a sufficient time to obtain light on the relative efficiency and economy of farm storage houses cooled with ice, ice and salt, brine cooled with ice and salt, and mechanical refrigeration in Eastern New York. It is believed that in certain parts of the North, a distinct advance in fruit storage can be made through the utilization of properly constructed storage houses where the fruit can be held by the owner in first class condition for use as needed by his markets at less risk and expense than are involved in storage in a plant outside of his personal observation and control.

The practicability of freezing small fruits for use by bakers and confectioners in flavoring ice creams, sherbets, etc., and for use in pies is also being investigated. Such quickly perishable fruits as strawberries and raspberries, which can only be held in good condition in ordinary storage for a very few days, are found to be preserved in practically perfect flavor and condition for

several months by freezing quickly before they are overripe. This new phase of the cold storage business is already becoming of large commercial importance in some of the larger cities.

#### TRANSPORTATION OF CITRUS FRUIT.

For some time past the conditions directly concerned in fruit transportation have been under investigation, and these have now assumed such importance that they are being given special attention. The behavior of peaches in refrigerator cars as shipped from Georgia and California is being thoroughly investigated, both at shipping point, in transit and at destination. In this connection, thorough tests of the precooling of fruits intended for such shipment are being made. In the case of peaches in Georgia, it has been found that a large part of the rot in transit to northern cities occurs in the two upper tiers of carriers in the car, the three lower tiers arriving at destination in sound condition. This unequal condition is unquestionably due to the very rapid cooling of the fruit in the bottom of the car and emphasizes a conclusion previously reached in these investigations that quick cooling after picking is a fundamental requirement in successful cold storage or shipping operations. In both Georgia and California, the preliminary work along this line has been done in refrigerator cars on track which were equipped as stationary refrigerators in which the fruit could be quickly reduced from the temperature of the outside air to about 40 degrees F., by the use of ice and salt. Fruit cooled in this way, before being loaded into the cars for shipment, was found to arrive at destination in much better condition, and to remain sound longer after arrival at destination, than that shipped under ordinary icing, even where well ripened fruit was used in the precooling tests and prematurely picked hard fruit for the ordinary shipments.

This line of work, of course, involves a radical change in some of the present commercial methods of shipping, and further tests are needed before investments in precooling plants could safely be made.

In this connection, an investigation of the causes of decay in oranges and lemons in transit from California to Eastern markets is now under way. The losses from this cause are said to have aggregated not less than half a million dollars a year for several years and to seriously menace the future of the industry. As the result of systematic observation of the practice of growers and packers in the handling of oranges, it was discovered early in 1905 that about one-fifth of the orange crop is made susceptible to decay by improper handling before the fruit is packed. These injuries are caused by the puncture of the skin with clippers used in cutting the oranges from the trees, by punctures from stems left too long, by finger nail cuts in handling and by other mechanical injuries in the handling of the fruit in orchards and packing houses. Experiments having demonstrated that from 10 to 50 per cent. of these injured fruits are likely to decay if favorable conditions of heat and humidity develop. Growers were notified of the danger, and as the industry is quite thoroughly organized, the information was immediately put into practice, with the result that one of the leading growers and shippers of Southern California estimated in the spring of 1905 that the department investigations in that section had saved the industry at least \$200,000 on the last crop. Extensive tests in precooling oranges, both in stationary storage houses and in cars on track by blowing cold air through them after they are filled with fruit, until the temperature of their contents is reduced to a satisfactory point, have demonstrated that

with oranges, as with peaches, quick cooling is an important factor in checking the ripening processes and in preventing the development of rots.

#### VITICULTURE INVESTIGATIONS.

Under this head a comprehensive study of the relative adaptability of phylloxera resistant stocks to soils in being made in California, where nearly, if not quite, \$100,000,000 is invested in the viticulture industry. Other allied questions are also under study there in nine coöperative experimental vineyards located in representative viticultural sections of that State. During the past year, a special study of the rotundifolia or Scuppermong type of grapes in the South Atlantic and Gulf States has been begun. It is believed that this native species is capable of quick development into an important cultivated type and that its varieties will be found well adapted to the climatic and soil conditions of the South Atlantic and Gulf States where other cultivated grapes are grown with much difficulty and at considerable risk of loss by the grower.

#### FRUIT DISTRICT INVESTIGATIONS.

Under this head a careful field study of the adaptability of varieties of orchard fruits to particular soils, elevations, slopes, etc., is being made with the view of determining through actual observation as well as through the recorded experience of fruit growers, the exact conditions under which varieties reach their highest perfection and meet the most evident needs of our markets. This work has thus far been mainly limited to the Allegheny mountain region, from Pennsylvania, southward, and the Ozark region of Missouri and Arkansas. In connection with it, exact data on the blossoming and ripening dates of particular varieties in most of the important fruit districts of the country are being made by several hundred volunteer observers, with the view of securing accurate information on points connected with the selection of varieties for mixed planting when cross fertilization is necessary, and for ascertaining the duration and exact time of the blossoming periods for use in those portions of the country where the relation of these phenomena to the average date of last killing frost is important. A report upon this subject, covering the South Atlantic States, is already in manuscript and will soon be published.

#### MISCELLANEOUS PROBLEMS.

Under this head, investigation of the cultural varieties of the pecan and other nuts are in progress, and of the peach and other fruits. A special study of the summer apple industry of the Chesapeake Peninsula, has been nearly completed, and an investigation of the apple evaporating industry as it exists in the East, both of which are about ready for publication and distribution.

#### BREEDING HARDY RASPBERRIES FOR THE NORTHWEST.

N. E. HANSEN, SOUTH DAKOTA AGRICULTURAL COLLEGE, BROOKINGS, S. D.

1. That hardier varieties of the raspberry are needed is evident from the fact that all of the present standard sorts are not hardy over a large area of the prairie Northwest.

2. Some of these old varieties are grown under winter protection, the

canes being laid down in the fall and covered with earth. This method is expensive, and the work is distasteful to the busy prairie farmer, who likes fruit, but cannot find time for such extra work as laying down raspberry canes.

3. These tender varieties were developed in large measure from the native raspberries of the eastern states. (1) by selection from large numbers of seedlings under cultivation; (2) by crossing with the cultivated raspberries of Europe; (3) by the finding of choice fruited plants found growing wild, thus taking advantage of Nature's efforts in this line.

4. Those seedlings having much of the European species in their make-up usually proved tender under cultivation, even in the milder climate of the East. But neither these, nor those of pure eastern native ancestry proved sufficiently hardy in the prairie Northwest.

5. This is another instance of De Candolle's law that wild woody plants have not advanced one hundred miles north of their natural limits within historic times. But as raspberries of the same species are found indigenous far northwestward, it is quite evident that Nature has accomplished the task of adapting the raspberry to a colder and drier climate. But how many thousand years has she taken to do this work?

6. The great task remains for us to breed a hardy race of raspberries from our native Northwestern form of the species. This must be done: (1) by selection from thousands of pure native seedlings under cultivation, the endeavor being to raise as many generations under high cultivation as possible, until varieties are obtained combining hardiness and productiveness of plant with large size and good quality of berry. (2) By crossing with the best tame and native varieties of America, Europe, and Asia.

7. The writer's efforts at the South Dakota Experiment Station began ten years ago, and are just beginning to show good results. From many parts of the Dakota, Minnesota, Manitoba, and Assiniboia, the native raspberries have been gathered; and many thousands of seedling raised under high cultivation, both pure-bred, and crosses, and hybrids with other raspberries from three continents. Not all of these have fruited, but of those that have fruited a goodly number have been selected as worthy of propagation. One especially is promising at this writing, the "Sunbean," appearing as the lone survivor to cheer us when the outlook was dark for hardy raspberries. It is a hybrid of Shaffer's Colossal with a wild red raspberry from Cavalier County, North Dakota, near the Manitoba line.

8. The essential demand of a seedling raspberry or of any other of the quarter of a million fruit seedlings raised at this station, is that it must endure the winters unprotected without injury (this means at times  $-40^{\circ}$  F., with the ground bare), and be productive of fruit of fair size and quality.

9. It is my constant endeavor to breed a cosmopolitan group, not one race only adapted to a narrow range. This cross-breeding of many races may produce this.

10. If twenty thousand seedlings will produce this desired plant, well and good. If two hundred thousand seedlings are necessary, it will be the writer's best endeavor to raise that number. The history of horticulture shows that in large numbers lies rapid progress. And time-saving is an important factor in this rapid age. From the ashes of millions of seedlings will arise, Phoenix-like, the new creations which will dominate our future prairie pomology.



REPORT OF THE CHAIRMAN OF THE COMMITTEE ON REVISION  
OF THE CATALOGUE.

W. H. Ragan, U. S. Department of Agriculture, Washington, D. C.

Mr. President, Ladies and Gentlemen: In the report to this Society, in September, 1901, your chairman said: "It is probable that a complete revision of your catalogue of fruits, may be desirable before the next biennial meeting of the Society," and yet four years more have been added to the calendar of time, and no such complete revision is now ready to be offered. If a hint of the demands of the times was then admissible, how much more important is it that it should be renewed, with emphasis, at this time? Some varieties that were then included in the lists, are now well known to have become almost or quite obsolete from the lapse of time, while others have proven themselves worthy that were then wholly or partially unknown. From these and other causes, your chairman now feels more than ever inclined to urge upon the Society the importance of immediate steps being taken, looking to a thorough and careful revision of its catalogue in time for its consideration and approval when the next regular meeting shall occur. Such work can only be done (as it should be) through much patient and intelligent labor. A carefully selected committee should in our judgment be chosen at this time for carrying forward such an undertaking. It is quite probable that the government, through the United States Department of Agriculture, will still continue to cooperate with the Society, in facilitating such a desirable object, as is sought to be accomplished in a further revision of its fruit catalogue. For in the event of the continued cooperation of the Government, the work of revision can be made much more thorough, besides the people of the whole country would be infinitely more benefited thereby.

In regard to the best method of procedure in securing correct and desirable data for such a revision, your chairman is at a loss to know how to make better recommendations than those embraced in his report for 1899, and which may be found on page 99 of the published proceedings of the Society for that year. They are as follows:

One of the greatest difficulties experienced in the discharge of my duties as your chairman, has been in securing abundant and reliable data upon which to base the revision of the catalogue. The plan pursued has been substantially that followed by my predecessors in the past: That is, in cooperation with the several State chairmen and their sub-committees. But the plan would seem to have had its day, and especially now, that the Division of Pomology is so efficiently aiding the Society in the performance of this important work. It would now seem that we should have a broader plan, one that would come in touch with a larger number of practical fruit growers in the several states and districts of our country. To this end I would suggest that a special form of inquiry, concerning the behavior of varieties and their ratings by practical fruit growers quite generally, be sent out and answers secured from all such available sources. These, when compiled and tabulated for publication, by districts, would have a meaning of far greater value than if secured as now, from so limited a number of individuals. In other words, I should make this inquiry very general, so much so that answers would be secured from a large list of practical fruit growers. And I would have these answers come direct to the committee, or to its chairman, and not through any secondary channel. These

answers or reports on the behavior of varieties, when compiled and tabulated by your committee, would much more faithfully and accurately present the lists of varieties for each of the several districts, than can the present plan.

As to how these answers, or reports, are to be secured, I would recommend that a printed list of varieties, embracing all that may be well known and tested, of each species of fruits and nuts, with their descriptions, and blanks for new and unknown varieties, with blanks for their return, after being filled out, be sent to fruit growers. These blanks, as above indicated, should embrace a pretty large list of names of varieties that are likely to receive the approval of fruit growers who have tested them, to be followed by the usual descriptive columns and the abbreviated descriptions, subject to such changes as the persons reporting would indicate, and a column for his ratings of the particular variety. This column to be marked by him, in all instances, if the variety succeeds with him (the reporter), to be indicated by an asterisk (\*); if highly successful, by two asterisks (\*\*); if considered promising, by a dagger (†); if tested and found undesirable, by a dash (—); or if unknown or untested by him in his locality, by a dotted line (...).

With answers to this form of inquiry, we would secure exact and reliable data, from a practical standpoint that would be of great value to planters and others seeking such information, while the fact that the catalogue revision was based on the far greater number of answers returned, would add still more value and importance to the work of the committee and the Society.

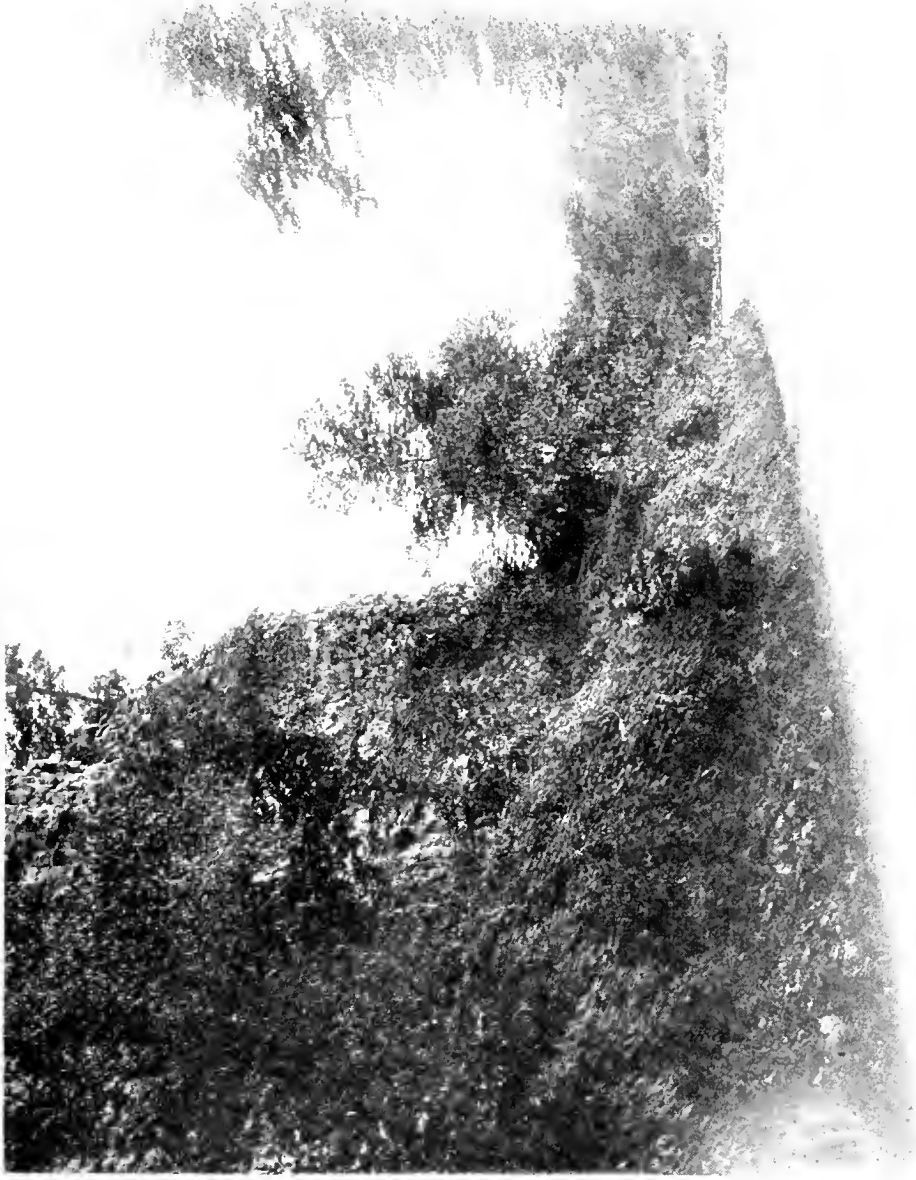
These are the principal suggestions that your chairman would offer as the result of his experience and observation while performing, to the best of his ability and in his peculiar way, the responsible duties you have assigned him, though there are many minor points that might be profitably discussed if time and space admitted.

During the last six years and since the original publication of the present catalogue, your chairman has received many suggestions concerning changes that were thought to be desirable. These have been carefully filed for reference and may be considered at such time as the real work of revising the catalogue can be taken up.

Some misunderstanding in regard to the nature of the Society's Catalogue of fruits, has led to more or less criticism and even dissatisfaction, from various sources. Such lists are not supposed to embrace all the known varieties that may be successfully cultivated within a given State or district. They are more in the nature of select lists of varieties that can be recommended from actual trial for planting in the several districts, and the chief merit in such lists must be found in the care manifested in their preparation. They should be as nearly reliable, as safe guides to the planter, as it is possible to make them. No variety should find a place in the Society's catalogue, that has not been thoroughly "tried and not found wanting," within a given district. If not well known and satisfactorily tested, yet promising, it should go in the list for "trial only." For these reasons, the opinions of practical planters are alone sought, in the collection of data for the revision of the Society's catalogue of fruits.

#### STEWED LEITCHEE.

The Chairman: I brought up here a can of the Chinese fruit which I spoke of in my paper last night, and I want two or three seconds to speak of that. One of the pleasantest memories of my whole long trip was the stay of two or three days in a private hotel kept by an Italian in Yokohama, Japan. The finest cook that I found between Des Moines and the other side of the earth



CLIFF DRIVE—NORTH TERRACE PARK.



and back again was at that house. One day at dinner, after a most elaborate meal with half a dozen courses and plenty of fine Italian wine, there was a peculiar exquisite dessert, the like of which I never tasted before. I could not place it, I could not imagine what it had been made of, and since I tasted this I know that it was some preparation of this leitchee, so I hope that some men in the United States will grow some of it for us, and now, having got so far along this pleasant afternoon, you stand adjourned until 8 o'clock this evening. (The stewed article was then duly sampled.)

#### THURSDAY EVENING SESSION.

The meeting was called to order by the Chairman at 8 p. m.

The Chairman: Mr. Ragan will give us the report of the committee on Necrology. (See first pages of Report.)

The Secretary: I would like to present on behalf of the committee appointed at the Boston convention the report of their work on score cards method of judging fruits. I have the report here in full; I am not going to present it in full at this late date, but I owe it to the Chairman and members of the committee to say that they have done their work and have done it well, and I desire the authority of this Society to have that report printed in the proceedings; I will give you a digest of it, if you please. The report covers a simple and suggestive model score card for the leading classes of fruits. These score cards are placed in our report for the purpose of giving State horticultural societies, State fair associations and all that sort of associations an opportunity of using a systematized method by which awards may be made; a method whereby the judging of fruits may be brought down to a systematic basis, and this committee through its Chairman, Professor Waugh, of Mass., has been laboring on the work for two years. They presented a preliminary report at the Boston meeting, and they have now revised and added to that; and yet they do not claim that the report is quite complete, it is tentative, but it is additional and has been much improved over the first draft.

The report is not unanimous, that is, has not met the views of all members of the committee, because the committee covered the United States, and the views of the man in Florida did not exactly coincide with the views of the man in California or the views of the man in New England. It has resulted in the presentation of a minority report, so that we have a majority report, and a report of one dissenting member who presents a minority report.

It was moved that the majority report be adopted and that both reports be printed in the proceedings of the Society. (Carried.) Report, page—

#### THE BLIGHT CANCKER OF APPLE TREES.

H. H. WHETZEL, ITHACA, N. Y.

Early in June, 1904, there was received at the Cornell University Experiment Station, an apple branch bearing a peculiar cancker. This was sent in by a farmer living in the upper Hudson River region not far from Saratoga. The letter accompanying the specimen disclosed a startling condition of affairs in that section. Many trees had failed to leaf out, others had sent out a scanty supply of small curled leaves and were making little or no growth, still others had apparently leafed out all right but suddenly on one or more of the branches the leaves had turned brown and dried up and the limb had died. Practically all

of the trees, even those apparently healthy, showed a considerable number of cankers either in the crotches of the large limbs, on the limbs themselves or on the trunks. An examination of the specimen sent in failed to disclose any fungus growth to which we could attribute the trouble. It was decided that a trip to the infected section should be made and upon entering the Hudson River Valley north of Albany it at once became evident that the writer of the letter had not exaggerated. The young orchards along the line of the trolley were a sorry sight. Many trees were entirely dead and nearly every one showed one or more dead limbs. Most of these orchards were about eight to fifteen years old and just coming into bearing. Of all the trees of this age it was estimated that at least ninety-five per cent. were diseased, and repeated trips to this region during the present season have fully justified this high estimate. Pears were practically all dead, having succumbed the previous seasons.

Following this came reports and specimens of the malady from other sections of the State and from other States. A trip to the north central part of the State was made in the autumn of the same year (1904) and so prevalent and serious was the trouble that it was decided to begin a thorough and systematic investigation of the disease. The work was taken up in earnest early in March 1905. An orchard of 350 trees a short distance from Ithaca was known to be slightly affected and arrangements were made with the owner to conduct our main investigations on his trees. Weekly visits have been made to this orchard and careful notes on the condition of each tree recorded. Several trips to other sections of the State and especially to the Hudson River region have been made. A large amount of data in the form of notes, photographs and cultures have been collected. It is as yet, however, too early in the progress of the investigations to make definite statements regarding the cause of all of the phenomena observed. In certain cases the cause of the disease has been conclusively determined. Cankers similar to those on diseased trees have been produced by artificial inoculations and it now seems probable that the different forms of cankers and twig blights observed will be found to be in most cases due to the same cause.

#### HISTORY OF THE DISEASE.

From an examination of agricultural literature it appears that the disease has been known in this country since 1780. Numerous orchardists and investigators since that time have called attention to certain forms of canker of apples and pear trees and various agents have been suggested as the cause of the same. It is now well established that the twig blight of pears and apples is due to the same organism and while from time to time these cankers on body and limbs have been referred to the same cause, definite proof of this has not been well established. Attempts at inoculating the bodies of trees or even the limbs more than a year old have not been successful, and Paddock in his work on the New York apple tree canker in calling attention to the body blight of the pear says, "These definitely outlined and sunken areas of dead bark commonly known as body blight have long been thought to be due to the action of the pear blight bacillus; however, there seems to be no definite reason for such belief."

In very recent years numerous bulletins have appeared describing cankers of apple trees but these have been almost without exception investigations of fungus cankers of various sorts. Brzezinski in 1902 described a canker of apple and pear trees which he attributed to a new species of bacteria. The work

seems to have been done in France. The accurateness of his investigations have since been questioned.

Notwithstanding this dearth of literature on the subject, so general is the belief among pathologists that the cankers are caused by the blight bacillus that it seems strange definite work has not been done to settle the matter.

#### GENERAL CHARACTERS OF THE DISEASE.

The attention of the orchardist is usually first directed to this disease only when the affected tree is nearly or quite dead. Badly diseased trees either fail to leaf out at all in the spring or as is more usually the case send out a sparse growth of mouse-eared leaves (17) *i. e.*, small gray-green leaves with margins rolled or recurved. They do not have the dense dark green foliage of healthy trees. At first this condition is not sufficiently contrasted with the healthy trees to attract notice but as the season advances the healthy trees expand their leaves to normal size and the affected trees thus appear to suddenly cease growing. Frequently the leaves turn brown and dry up on the trees. Sometimes affected trees will pull through until fall but they fail to leaf out the following spring (6). On making a closer examination of these dying trees, sunken spots in crotches, limbs or body are found. Further search in the orchard is almost certain to disclose similar cankers in otherwise apparently healthy trees. The chief distinguishing character of this disease is the presence of these cankers. Along with this goes several other phenomena the relation of which to the disease has as yet not been entirely worked out (63). Among these secondary features, perhaps the most constant is the bleeding or exudation of sap from the heart wood where it is exposed by pruning or canker wounds. Often trees in affected orchards which show no trace of recent cankers will exhibit the most profuse bleeding from pruned stubs. There is another character which becomes quite evident, especially toward the latter part of the summer. The bark of badly affected trees often has a peculiar bronzed or light brown color. When cut into it is dry and pale with streaks of brown and does not have the sappy green color of healthy tissue. Such trees as if in anticipation of their early death, usually blossom abundantly and set a heavy crop. This was strikingly shown in a tree that I observed this spring (25). A canker on one side of the body had involved the base of a large limb. The side of the tree formed by the branching of this limb was one solid mass of blossoms (42) to the almost total exclusion of leaves, while the remainder of the tree was well leaved and bore a normal per cent. of flowers. The fruit which sets on such diseased trees and limbs matures abnormally early and is usually of very inferior quality, or owing to the drain on the already weakened tree, they may never mature at all but wither and drop from the dying branches. These phenomena in leaves, bark and fruit are to be attributed, I think, directly to the cutting off of the sap supply by the cankers on the body and limbs.

The various forms of cankers which have been under observation during the past two years, may be conveniently grouped as follows:

1. Limb and body cankers, or pit cankers.
2. Crotch cankers.
3. Pruned stub cankers.
4. Collar cankers or collar rot.
5. Scurvy blister of body and limbs.

A few pictures of each of these will give you some notion of their appearance and relation to the different parts of the tree. The cankers occurring on

the upper body and the limbs, exclusive of the crotches, are usually quite similar in form and appearance. They are sunken areas of dead bark of varying sizes, usually not more than an inch or two across but in severe cases running a foot (54) or more along the limb or even girdling it. The bark at some point in the diseased area is usually killed to and including the cambium, although about the margins it may affect only the outer layers or cortex. When the active progress of the disease is checked for a time a sharp line of demarkation between the diseased area and the healthy tissue is formed. This results from the active growth of a callus by the healthy tissues and the drying down of the diseased bark which causes this crack to form along the line between the two. The disease under favorable conditions may again advance its front and a succession of cracks are thus formed in the cankered area. In very many cases the disease appears to be active but once during the season and only small cankers are formed. There are usually circular spots with a cone shaped projection through the bark to the cambium. These I have designated as "pit cankers." Very frequently they never spread further. The dead tissue dries up and finally decays or drops out leaving a conical pit. The margins of this pit callous rapidly, but usually do not at once cover the bared spot of wood at the bottom. During the following seasons the disease may spread slowly from the margins of the pit and so after a time form a large ugly canker. Many of these pits finally heal entirely, but some of them exude sap throughout the season, even after the wound is nearly closed.

In those orchards where the disease has been most destructive, cankers have appeared in the crotches as well as on body and limbs. They are so far as I have been able to determine, of exactly the same nature as the limb and body canker. They have the same distinctive marks; the raised and blistered margins when actively progressing and the cracked border and sunken surface when old and dried. This dead tissue soon decays and falls out leaving the wood at the crotch bare or if the crotch be of the proper shape to hold moisture the wood becomes soft and rotten. Many of the cankered crotches also exude sap. They do not seem to heal as readily as do those on limbs and body.

In the orchard which has been under continuous observation during the past season it was early observed that the stubs of many of the pruned limbs and especially of those pruned in 1904, showed a collar of cankered bark. Sometimes this ran down the side of the limb to quite a distance. The pruned limb had failed to heal properly and the callous where formed was slight. The dead bark still clung to most of the stubs thus affected and when cut away showed the wood beneath dead and rotten, filled with the white mycelium of some decay fungus. This form of the disease was confined largely to one side of the orchard where two badly cankered trees were observed. From the peculiar distribution it seemd likely that the pruning knife had spread the infection from the two diseased trees.

#### COLLAR ROT.

At the base of many of the trees large cankers are often observed. These sometimes almost or quite girdle the body eventually killing the tree. They are usually accompanied by a roughening of the bark about their margins. In most cases they appear to be the same as the cankers on the limbs and upper part of the body. Whether they are of the same nature as the "collar rot" of King trees is a problem yet to be solved.

There is another phenomenon almost constantly met with in affected orchards. This I have designated as scurvy blister. It is most frequently



observed on the bodies of the trees but may sometimes extend to the limbs. The outer layer of bark assumes a darker color and becomes raised or blistered especially along the advancing front of the disease. The epidermis becomes loose and peels away easily. The cells of the cortex take on a dark watery green and are soft and crumbly. The trouble spreads quite rapidly and then ceases very suddenly. The diseased tissue dries down and cracks away from the healthy cortex along the line of the advancing front exactly the same as in the case of the body cankers already referred to. The scurvy blister differs from the other cankers in that it never extends deep into the bark and when scraped away shows healthy tissue beneath. It spreads from year to year and may be active at almost any time throughout the summer.

It may be well at this point to note the difference between the canker already described and the well-known New York apple tree canker, caused by the black rot fungus, *sphaeropsis malorum*, Berk. The latter disease is often very destructive not only in the State from which it was first described but also in other States as well. It usually attacks old trees, although I have recently received fine specimens on young trees from Iowa and have observed it occasionally in New York. Diseased trees affected with the sphaeropsis, show a very dark almost black bark where the disease is active. The tissue becomes sunken and dry at once and the margin along the advancing front of the disease, is sunken instead of raised or blistered. The line of demarkation is not so definite as in the blight canker. The distinctive character of the disease, however, is the early appearance of the fruit bodies of the fungus in the diseased area. These small black pimples are always formed in great abundance in a canker of any considerable size. No fruit bodies of any sort appear in the blight canker until late in the autumn or the following season. They often show fruit bodies of a variety of saprophytic forms which have attacked the dead tissue. The old cankers of the two diseases appear quite differently also. The New York apple tree canker shows a rectangular cracking or checking of the bark that is characteristic and never observed in the blight canker. The sphaeropsis canker is always black, the blight canker brown.

#### THE CAUSE OF THE CANKER.

The very general opinion of growers throughout those sections where the disease is most severe, is that the trees were killed by freezing. A sudden fall of temperature below zero late in the autumn of 1902, following a wet and unusually long growing season is referred to by farmers as the initial cause of the trouble, the first marked effects of the disease having been observed the following June. The winter of 1903-4 was a very severe one, extremely low temperatures having been recorded throughout New York. In some sections the blacking of the cambium between the wood growths of those years is proof that the trees did suffer from the severe winter. That this weakening of the trees may have had much to do with their susceptibility to the canker disease I am willing to allow, but that it was the direct cause of the cankers finds no acceptance in my mind. Moreover, careful questioning of growers in the Hudson River region brought out the fact that the cankers were observed in the bodies of the trees previous to 1902 and a few of the affected trees had died before that time.

That the cankers were caused by some fungus was my first thought but failure to find any fungus mycelium in recently cankered tissue and the non-appearance of fruit bodies until the cankers were quite old, soon dissipated that

notion. When fruit bodies of fungi did appear they were of saprophytic forms of several species. No one species was observed to occur constantly in the diseased areas.

During May of the present year, while examining a badly cankered tree in the university grounds, I was surprised and delighted to discover what I was at once sure was the cause of the trouble. It had been damp, rainy weather for several days and many thick, milky drops were oozing from the surface of a freshly cankered area at the base of a large limb. An examination showed this liquid to be alive with a short rod-shaped bacillus. The diseased bark was soft and watery and sap from within was also found to be teeming with the bacteria. I had for some time suspected that the canker was a bacterial disease but my failure to find an actively spreading canker had made certainty impossible.

Pure cultures were obtained at once and a series of inoculations made. Inoculations direct from the diseased bark were made into a healthy pear tree and a healthy apple tree. This resulted in well-developed cankers, especially in the pear tree. Inoculations of pear and apple twigs and blossoms were also made from the canker. Those all gave excellent cases of blight in from 10 to 14 days. These twig blight experiments were twice duplicated during the season with pure cultures of the organism obtained from the canker. The period of incubation for the canker on the bodies of the trees was much longer. The exact time was not determined, but the pear took sooner than the apple.

The twig blight of pears and apples became very severe in July and August throughout the section about Ithaca. The fruit was frequently affected. A large number of cultures from these different sources were obtained and a comparative study made of the organisms. Those from the twigs, fruit and cankers, both of the apple and the pear were found to be the same. Inoculations were made from pears to apples and from apples to pears always with the same result that the typical blight appeared in about ten days. There can be little doubt then that the organism of the apple canker is identical with that of the fire blight of pears and apple twigs, *bacillus amylovorus*.

#### METHODS OF INFECTION.

There are several ways in which infection from this disease may occur. No doubt there are other agents than those which I have observed. I shall, however, confine myself to cases that seem well authenticated by actual observation. I soon observed that a very large per cent. of the cankers on the limbs and upper part of the body occurred where a sprout had been pruned away. For a long time I attributed this to infection from the pruning knife or from insects that followed the pruner to suck up the exuding sap. That this was in some cases a correct deduction will appear later. The riddle was definitely solved for me early in July. At this time twig blight became very prevalent. In the orchard under observation, the Greening trees suffered severely from it. The water-sprouts which were now being put out abundantly were especially subject to the attacks. Just how the disease is communicated to the twigs and water-sprouts, I am not prepared to say. I believe it is generally attributed to insects. Once in the water-sprout, however, the disease progresses rapidly down the succulent tissue toward the limb from which the sprout springs. If conditions are favorable and the sprout not too long, the bacteria reach the base and spread into the surrounding bark tissue of the limb, giving rise to a typical limb canker. If the sprout arises from the body as is often the case,

in young trees, a similar result follows and we have a typical body canker. The dead spur or sprout soon drops away and as its woody part rapidly decays for some distance into the limb or body it is quite impossible after a time to tell just how the sprout was removed.

There were on the trees along one side of the orchard, a large number of cankers that could not be explained in the ways already described. They formed collars of dead bark about the stubs of large limbs pruned out the previous season. Instead of forming a callous and proceeding to close the wound, the tissue had died often for a considerable distance back from the cut surface and in some cases the canker had run down the side of the adjoining limb. There were two trees on this side of the orchard that were badly cankered and from which dead and dying limbs had been cut the previous season. I at once suspected the pruning knife or the insects that followed after had been responsible for the infection. Proof of my theory came from an unexpected quarter. While making inoculations into the body of an apple tree on the station grounds, I had occasion to remove, from near the base, a large water-sprout of several years growth. This I did with my knife which I had but shortly before used to cut from a fresh canker a piece of bark for inoculation purposes. Some time after I observed a well-developed canker about this pruned stub.

Of a similar nature to this are the cankers that arise from wounds or bruises on the limbs and bodies of trees. These wounds commonly known as "barking" may be made by careless workmen in plowing or working about the trees or by the gnawing of animals, one of the worst of which in New York is the woodchuck. A large per cent. of such wounds heal eventually but frequently, through the agency of insects or other means, these wounds serve as infection courts for the canker bacillus. An interesting wound infection came under my observation this season. In cutting a cankered branch from a tree I accidentally "barked" a large limb with the freshly cut end of the diseased branch. I thought little of it at the time but returning to the tree later to get material for cultures from the diseased stub, I was delighted to find on the wounded limb about the abrasion a large and actively spreading canker.

I believe that insects are responsible for a large number of infections, especially those on the bodies and in the crotches of the limbs. To prove this in most cases is quite a task to say the least. A large number of the cankers, especially at the bases of the trees, did not seem to have had their origin either in a bruise or from a blighted water-sprout. I was convinced that the puncture of insects was responsible for the infection. As I went from tree to tree one day on my weekly inspection, the proof of this conviction was presented to me. You can see in this picture the hole made by the insect and surrounding it the well marked boundaries of a recent canker. Whether the borer itself caused the infection or whether it was brought later by flies that came to feed on the exuding sap cannot be said. In either case it was the borer that afforded the infection court.

As a general deduction then it may be said that infection occurs only through a wound of some sort. Moreover, I believe that the infection court must be of such a nature that it will not dry out quickly. An abundance of moisture is known to be necessary for the rapid development of the blight organism. This was repeatedly demonstrated in the large number of pure cultures which I had under observation during the summer. The growth was most abundant and vigorous in liquid media. Where the diseased tissue of freshly spreading cankers was cut out with a knife and the wound exposed without any other treatment, the canker ceased to spread and the place healed rapidly.

## PART PLAYED BY SECONDARY FUNGI.

There is one feature of this canker disease to which I have been able to give but little attention, but which I feel sure is to a large degree responsible for its destructiveness. This is the entrance of secondary fungi and bacteria through the infection courts thus formed. In the majority of cases the canker does not spread sufficiently to kill the tree. In fact the host often succeeds in quickly healing a canker wound completely. The dead tissue of the canker offers an excellent pabulum for saprophytic fungi and bacteria of various sorts and these quickly avail themselves of the opportunity presented so that in a very short time after the canker is formed the mycelium of different fungi may make its appearance in the dead tissue. Where the canker occurs in the crotches of the limbs there is the added factor of abundant moisture which is held in the cavity, the dead tissue acting as a sponge. Under such conditions certain decay inducing fungi quickly extend their operations to the heart wood and even though the wound be eventually healed the tree is permanently affected with heart rot. This was especially noticeable in the case of the pruned limb cankers. The collars of dead bark were like sponges to hold moisture for the heart rot fungi which quickly spread to the wood of the healthy limb through the entrance afforded by the dead pruned stub. Where a pruned surface heals over properly there is no dead bark to act as an infection court and fungi find it much more difficult to effect an entrance through the dry smooth surface. In the Hudson River Valley the high percentage of dead trees is due, I feel quite sure to the work of these secondary fungi which, gaining an entrance through the dead canker spot spread gradually through the heart wood and even through the living bark. Several well known semi-parasitic wound fungi were found repeatedly in affected trees. This matter of the secondary fungi of the canker, is a problem in itself and will without doubt yield interesting and profitable returns to the investigator.

## TREATMENT

We now come to that portion of the subject that is of especial interest to the grower and which to him is the end and aim of all investigations into the nature of the disease, namely, the means of combatting it. And intelligent treatment of a disease depends upon a more or less complete knowledge of the nature of the organism causing it. The work of the past year has therefore been devoted almost entirely to a study of the phenomena exhibited by the disease and the cause of the same. I have, however, made some preliminary experiments which seem to give some indication of the methods to be used in combatting it. The first and most difficult demand of the grower is that we *cure* the diseased plant. In most cases this is impossible or the value of the plant does not warrant the effort required to save it. But in this case the saving of a tree just coming into bearing seemed worth the while. I therefore treated cankered trees in various ways. I will not burden you with unsuccessful or doubtful remedies. The treatment which at present appears most successful is to clean out the canker, *i. e.*, remove with a sharp knife all diseased tissue, swab out the wound with a two per cent. solution of corrosive sublimate, or a three per cent. solution of copper sulphate, and when dry paint over thoroughly with some heavy paint. The painting should be repeated later in the season. This sort of treatment was given in the spring or early summer so that wounds would have time to heal well, which they did in most cases. A sharp watch

should be kept for the appearance of these cankers and they should be promptly cut out and treated.

It has long been known that highly fertilized and cultivated pear orchards suffered most from attacks of the twig blight and it is not surprising that the same seems to be true of the apple trees. Although my observations on this point are limited, they seem sufficient to make it a safe statement that cultivation and fertilization greatly increase the susceptibility of the apple tree to this disease. This seems to have been shown in the case of one orchard visited. One end of the orchard had not been cultivated for several years, while the remainder had been cultivated every year since setting until the last two seasons. The untilled portion showed a very low per cent. of affected trees, while the cultivated trees had almost completely gone out.

My observation so far seems to show that there is also considerable difference in the resistance of different varieties to the disease. Of those varieties that have come under my notice, only one seems to be entirely immune to attacks of the organism. In an orchard of some two hundred trees all have gone out except seven Wolf Rivers, which show not a single canker and are strong and thrifty. A provisional arrangement of the varieties observed according to their resistance ability may be said to be: Wolf River, Tollman Sweets, Peawaukee, Red Astrachans, Tetofsky, Grimes Golden, Winesap, Fameuse. The more susceptible varieties seem to be: Baldwins, Ben Davis, Mann, Hubbardston, Fall Pippin, Stark, Greenings.

Observations made in several orchards where top grafting has been practiced indicates that desirable varieties especially susceptible to the canker may be grown by top grafting on resistant stocks. Tollman Sweets and Wolf River seem to be especially desirable. The grafts should be set well out on the main limbs to avoid the formation of large crotches by the scions. Continued observation will no doubt revise and add to the list of resistant and susceptible varieties.

The speaker appreciates the incompleteness of his work in many points and begs that you will favor him with any observations or suggestions that you have to offer now or at any future time.

This last picture shows an orchard along the Hudson River of originally four hundred trees. Less than ten are now entirely free from the disease and not over one hundred are still alive.

# Reports of Committees

## I. REVISED REPORT OF THE COMMITTEE ON SCORE CARDS

Chairman F. A. Waugh, Amherst, Massachusetts

PREAMBLE: This committee was appointed at the Boston meeting (1903) of the Society to prepare a set of official score cards. The scope of the committee's work was not mapped out, and the committee therefore has been compelled to use its own discretion as to what ground should be covered. A somewhat thorough and comprehensive study has been made of the subject with reference to the principal fruits grown in North America, and the majority of such fruits are reported on herewith.

Early in our work, however, it became apparent that this report could not be final. From the nature of the subject, no absolute end can ever be reached; but, further than that, some of the subjects coming before the committee have been found beset with so many difficulties that even a provisional settlement can hardly be proposed at this time. The committee, therefore, recommends that the work be continued, and that new men be appointed to the committee if the Society sees fit.

As the committee interprets the purpose of the American Pomological Society in this undertaking, there are three principal objects sought in the adoption by the Society of such a scheme of score cards, as follows:

1. These cards shall be used for judging fruits at the exhibition of the Society.

2. In adopting this plan the American Pomological Society shall be understood to recommend the system of score card judging to State, provincial, and local societies.

3. Wherever it may be thought best, the exact score cards adopted by the American Pomological Society may be used without change in such State, provincial, and local societies.

For reasons more fully set forth below, however, the committee does not deem it wise to urge upon local societies the exact adoption, without alteration, of the American Pomological Society's score cards.

Each score card is merely a statement of an ideal. The subjoined score card for commercial apples simply shows what qualities we think a commercial apple should have and what we consider the relative value of those several qualities. Our ideal dessert apple differs from the ideal commercial apple, and this difference is expressed in another score card. We recognize, furthermore, that there is a wide range in differences of opinion—*i. e.*, differences of ideals—among different men and between different parts of the country. These differences we believe to be essentially justifiable and proper. We do not think it necessary or desirable that all men should hold the same ideals. Indeed were it possible to bring all men to one ideal, our pomological progress would instantly be stopped and the possibility of further advancement totally destroyed.

To use a specific illustration, it is not considered final to divide apples into

two classes, commercial and dessert, to be judged by two different score cards. The ideal commercial apple in Nova Scotia is quite different from the ideal commercial apple in Colorado, and such a difference might be properly expressed in score cards. In other words the Provincial Society of Nova Scotia might properly have a score card for commercial apples different from the one adopted by the Colorado State Society, and these might both be different from the score card of the American Pomological Society.

Another point in which we feel our work is a compromise, rather than a finality, is in the degree of elaboration given to the several score cards. The score card is an assistance in judging fruit because it analyzes the various qualities to be passed upon. It is obvious, however, that too elaborate a score card entails great labor upon the judge, and becomes a hindrance rather than a help in the work.

The simplest score card would be as follows:

Appearance .....	50
Quality .....	50
	<hr/>
Total .....	100

The practical score card lies between these extremes. In general it has been the policy of the committee to make the score card somewhat more elaborate than would be required in common use, on the theory that it will be easier to simplify a proposed card than to elaborate it when required for use.

In practical judging, points occasionally arise which cannot be provided for in a score card. One of the commonest is exemplified in the premium sometimes put on "extent of exhibit." Often prizes are offered for "the largest and best exhibit." In such cases we recommend that the fruit be scored in the usual way; but that 10, 15, 20, or 25 points, as may be agreed, shall be added to the score card for "extent of exhibit." The total possible score would then be 110, 115, 120, or 125, as the case might be.

The committee understands that its first duty is to provide score cards suitable for judging fruits at fairs and exhibitions. The score cards herewith presented deal, therefore, only with the fruit itself. They are intended to provide a standard for scoring the particular specimens under consideration at a given time, and not for expressing the relative value of a variety in contrast with other varieties. In order to arrive at an estimate of the value of any particular variety, it is necessary of course to consider also the qualities of the tree or vine, such as hardiness, productivity, etc. This is another matter and one which the committee has reserved for future consideration.

In judging fruits at exhibits, it is commonly necessary to compare different samples of a single variety with one another, as for instance, which is the best of several plates of Elberta peach. The fruit grower himself, however, often wishes to compare one variety with another, as for instance, which is the more desirable, the Elberta or the Late Crawford. The two problems are essentially different, but the score cards herewith presented are designed chiefly with a view to assist in the solution of the former.

The term "Quality" as used in the score cards is intended in all cases to cover those characteristics of skin, flesh, and seeds, which, taken together, determine the desirability of the fruit for table use: such as thickness, texture, and flavor of skin; texture, flavor, and aroma of flesh; freedom from objectionable seeds, and ease with which same may be removed; proper proportion of juice to pulp, etc.

It is understood throughout this work that score cards and scales of points are intended to assist the judge, not to take his place. They may help him in making up his opinion, but they are not substituted for his expert knowledge, nor should they interfere with his exercise of it. With or without a score card, a good fruit judge must know something about fruit, and must have a good judgment with regard to its qualities.

The score cards as recommended follow herewith:

SCORE CARD FOR COMMERCIAL APPLES AND PEARS

Form .....	10
Size .....	15
Color .....	20
Uniformity .....	20
Quality .....	15
Freedom from blemishes .....	20
	<hr/>
Total .....	100

SCORE CARD FOR DESSERT APPLES AND PEARS

Form .....	10
Size .....	10
Color .....	20
Uniformity .....	15
Quality .....	25
Freedom from blemishes .....	20
	<hr/>
Total .....	100

SCORE CARD FOR COMMERCIAL PEACHES

Form .....	10
Size .....	15
Color .....	20
Uniformity .....	20
Quality .....	15
Freedom from blemishes .....	20
	<hr/>
Total .....	100

SCORE CARD FOR DESSERT PEACHES

Form .....	10
Size .....	10
Color .....	15
Uniformity .....	20
Quality .....	25
Freedom from blemishes .....	20
	<hr/>
Total .....	100

Note: Apricots and nectarines are to be scored exactly the same as peaches.



SCORE CARD FOR COMMERCIAL PLUMS

Form .....	10
Size .....	15
Color .....	15
Uniformity .....	20
Quality .....	20
Freedom from blemishes .....	20
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Total .....	100

SCORE CARD FOR DESSERT PLUMS

Form .....	10
Size .....	10
Color .....	15
Uniformity .....	20
Quality .....	25
Freedom from blemishes .....	20
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Total .....	100

SCORE CARD FOR COMMERCIAL CHERRIES

Form .....	10
Size .....	20
Color .....	20
Uniformity .....	15
Quality .....	15
Freedom from blemishes .....	20
<hr/>	
Total .....	100

SCORE CARD FOR DESSERT CHERRIES

Form .....	10
Size .....	10
Color .....	15
Uniformity .....	20
Quality .....	25
Freedom from blemishes .....	20
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Total .....	100

SCORE CARD FOR COMMERCIAL GRAPES

Bunch:	
Size .....	15
Form .....	15
Berry:	
Size .....	10
Color .....	15
Bloom .....	5
Flavor .....	20
Carrying quality .....	10
Freedom from blemishes .....	10
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Total .....	100

## SCORE CARD FOR DESSERT GRAPES

Bunch :	
Form .....	5
Size .....	10
Berry :	
Size .....	10
Color .....	20
Bloom .....	5
Flavor .....	25
Quality of pulp .....	15
Freedom from blemishes .....	10
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Total .....	100

## SCORE CARD FOR WINE GRAPES

Bunch :	
Form .....	5
Size .....	10
Berry :	
Size .....	10
Color .....	20
Bloom .....	5
Flavor .....	30
Quality of pulp .....	10
Freedom from blemishes .....	10
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Total .....	100

## SCORE CARD FOR COMMERCIAL STRAWBERRIES

Size .....	15
Form .....	10
Color .....	20
Texture .....	5
Firmness .....	20
Uniformity .....	10
Quality .....	20
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Total .....	100

## SCORE CARD FOR DESSERT STRAWBERRIES

Size .....	10
Form .....	10
Color .....	20
Texture .....	10
Firmness .....	10
Quality .....	30
Aroma .....	10
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Total .....	100

Note: Raspberries, blackberries, and dewberries are to be scored the same as commercial strawberries.

SCORE CARD FOR CURRANTS

Size of bunch .....	15
Form of bunch .....	10
Size of berry .....	20
Uniformity .....	10
Color .....	20
Quality .....	25
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Total .....	100

SCORE CARD FOR GOOSEBERRIES

Size .....	15
Form .....	10
Color .....	15
Texture of pulp .....	20
Uniformity .....	15
Quality .....	25
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Total .....	100

SCORE CARD FOR PERSIMMONS

Size .....	10
Form .....	15
Color .....	15
Seeds .....	15
Uniformity .....	15
Quality .....	20
Freedom from blemishes .....	10
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Total .....	100

SCORE CARD FOR COMMERCIAL PECANS

Size .....	20
Form .....	5
Color .....	5
Thinness of shell .....	10
Cracking quality .....	20
Plumpness of kernel .....	20
Color of kernel .....	5
Quality .....	15
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Total .....	100

Note: In the absence of any better score cards the pecan scale may be used for walnuts, hickories, and similar nuts.

SCORE CARD FOR COMMERCIAL CHESTNUTS

(Contributed by G. Harold Powell)

Size .....	20
Form .....	5
Color .....	10

Freedom from fuzz .....	10
Size of basal scar .....	10
Quality of kernel .....	25
Thinness and quality of inner skin .....	10
Freedom from insects .....	10
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Total .....	100

## CITRUS FRUITS

The committee has spent more labor on the consideration of score cards for citrus fruits, especially the orange, than upon all other parts of this report combined. Nevertheless we find ourselves unable to make a satisfactory report at this time. Inasmuch as the two sections of the country chiefly interested in citrus fruits have worked out their own methods of judging in a manner fairly agreeable to themselves, and inasmuch as there is no likelihood of an early national competition in which the authority of the American Pomological Society would be appealed to, we think it best to postpone any further report on score cards for citrus fruits till the matter can be more carefully worked out.

Respectfully submitted,

F. A. WAUGH, Chairman.

W. A. TAYLOR,

JOHN CRAIG,

J. T. STINSON,

November 1, 1904.

Committee.

## APPENDIX TO REPORT

## THE COMMERCIAL VARIETY

The essential characteristics of a commercial variety are of two kinds: (1) Those relating to the tree; (2) those associated with the fruit.

The tree should have vigor expressed in terms of resistance to disease and climatic extremes; it should also be productive and have a wide range of adaptation. The fruit should be possessed of sufficient qualities of beauty as to render it salable; it should be regular in form in order to pack well; it should ship and keep well. Given an apple, for instance, with these characteristics, poor quality will not prevent it from being widely planted and becoming generally known on the markets—in other words, a commercial variety.

## THE AMATEUR VARIETY

In the amateur variety, quality is paramount. Weakness of tree, susceptibility to injury from cold or heat or disease, are all of minor importance. If the fruit is, when well grown, handsome (though even this may not also be essential) and of fine or superfine quality, we have a fruit which commends itself to the man who is willing to labor for it. This type of fruit is in a class by itself.

In order to properly judge fruits of these two classes, more than mere score card knowledge is necessary. *The judge should know the characteristics of tree as well as fruit*, though he is not expected to take the former into account.

MINORITY REPORT SPECIAL COMMITTEE ON SCORE CARD.  
AMERICAN POMOLOGICAL SOCIETY

By E. S. Hubbard, Federal Point, Florida

The American Pomological Society in considering the adoption of score cards or scales of points for judging fruits, is taking the most important step in its history, and one which, depending on the proportions of points given to appearance and quality, will have a far reaching influence for good or evil on fruit improvement in this country.

There are two methods in use for judging fruits. The first in which masses or collections are considered only for appearance of displays and the quality is not tested. The second in which both appearance and quality are considered to determine the relative pomological excellence of different varieties.

The following scale of points for pome fruits, by Col. E. F. Babcock used at the Columbia Exposition, 1893, is an example of the first method: adaptability 10, size 10, form 10, color 10, evenness 10, blemishes 10, handling 10, maturity 10, arrangement 10, quantity 10; making perfection 100 points.

Mr. G. I. Motz and myself used the following scale of points at the same place for stone fruits, which is an example of the second method: size 10, form 10, color 10, tissue 10, pit or seeds 10, juice 10, sweet or dessert 10, acid or cooking 10, maturity 10, flavor 10; making perfection 100 points.

This latter scale gives 50 points to the physical characteristics and 50 points to the juice and its flavor.

It is practically the same scale that was in use by the Florida State Horticultural Society for citrus fruits when this Society met with it in 1889 at Ocala, Florida.

The averages of scores at this and other citrus fruit competitions were the main factor in determining the relative merit of different varieties of oranges for culture in Florida. The decimal score for points makes a much more rapid scale to work with than one of mixed counts, the latter being very confusing and wasting much time where large numbers of varieties are passed on and recorded by judges.

I am sorry I cannot comment in detail on the majority report of this committee. I could not conscientiously agree with the principles on which the score cards were proportioned and sign the preliminary draft, of which, owing to request for immediate return and probable changes in final report I did not make a copy, and, although I so requested, the chairman did not send me a copy of the final report.

I am, therefore, compelled to confine myself to the score card for apples in the paper read by Professor Waugh at the last meeting, found on page 134 of the proceedings and used in the preliminary report for so-called commercial apples. This preliminary report started with the statement that quality only was considered in compiling the score cards, which, to say the least, is misleading, and I could not endorse it. What do pomologists generally consider quality in fruits? If an expert is given a specimen of the multitude of shown, but otherwise worthless apples that are continually coming forward for recognition he will probably say, the apple is of good form, size, and color, and very handsome in appearance but is dry, coarse, seedy, flavorless and of poor quality. Quality is undoubtedly generally understood to refer to what is found inside the apple, more particularly the flavor. In cases like this very wide dif-

ferences in results will be obtained in using the score card of the Massachusetts Agricultural College, just referred to, which gives but 15 points in 100 to quality and that of the Ohio Agricultural College which gives 50 points in 100 to flavor. The Massachusetts Agricultural College scale of Professor Waugh's is as follows: form 15, size 10, color 20, uniformity 20, quality 15, freedom from blemishes 20; making 100. In addition to the small score of only 15 points for quality I wish to call attention to the large score of 20 points for uniformity. Now uniformity amounts to a double score, for any lack of uniformity or evenness of size, form, color, or freedom from blemishes should be discounted specifically against the particular score in which the lack occurs, and not again be scored against in a general way under the head of uniformity. A much better score card would result if the 20 points for uniformity were left out and added to the 15 points for quality.

There are two points in judging the inside of deciduous fruits that receive no attention in the majority report on score cards, the pulp or tissue and seeds. Though two apples be of equally good flavor there is no question that a dry, coarse apple with large core and abundant seeds is less desirable than a fine grained, juicy fruit with small core and few seeds, or that a coarse, tough, stringy peach or plum with large pit is less desirable than a fine grained tender one with small pit, and these defects should receive due consideration in score cards where quality is considered. They form twenty per cent. of the score in both the Florida and California scales of points for citrus fruits.

I also fail to see the expediency of different score cards for dessert, commercial, and cooking apples.

The supreme test of all fruits is their palatability, eaten fresh, in their natural state. If some are not good enough for desert use, but must be used cooked, mainly as a sauce, preserve, or vegetable, the discount of their rating should not be among themselves, but with the superior fruits that can be used for all purposes. I believe that in a scale of 100 points, quality or the inside of the fruit should have 50 points, or one-half the score, and appearance, or the outside of the fruit, the other 50 points, and that any smaller recognition of quality will be very detrimental to improvement of varieties.

I think it will astonish the members of this Society to find that under Professor Waugh's score card, giving but 15 points to quality, showy and even poorer apples than Ben Davis will almost invariably give higher total scores than Rhode Island Greening or Roxbury Russett.

Have Pomologists given up hope that apples as showy, productive, and long keeping as Ben Davis will not be produced of as fine quality as the old standards, whose names can be counted on the fingers of one's two hands? This Society has a rule that "no variety shall be named unless distinctly superior to existing varieties in some important characteristic, nor until it has been determined to perpetuate it by bud propagations."

With a score card, and giving but 15 points in 100 to quality, what is this Society going to do when some apple more showy in appearance, but poorer in quality, than the Ben Davis outscores the old standards of quality in competition, and on the strength of this showing comes knocking for admission to the catalogue? Can the Society afford to encourage mediocrity in quality. I would suggest a score card as a basis for use for all deciduous fruits, subject to slight variations, perhaps, in some cases, giving one-half to the outside and one-half to the inside of fruits, as follows:

Form .....	10	
Size .....	10	
Freedom from blemishes .....	10	
Color .....	20	
Absence of tissue .....	5	
Absence or size of seeds or pit .....	5	
Quality divided as follows:		
Sweetness .....	15	
Acid .....	15	
Distinctive flavor or aromatic blend.....	10	40
		<hr/>
Total .....	100	

Trusting the Society will adopt the half and half principle of scores in scales of points and that tabulated records of scores in judging will be preserved for future use in making averages to determine relative merit of varieties, I respectfully submit this individual report.

## II. REPORT OF COMMITTEE ON NOMENCLATURE

CHAIRMAN W. H. RAGAN

Since the last regular meeting of this Society, a publication of importance, bearing on the subject of nomenclature, as it relates to the apple, has been issued by the United States Department of Agriculture. In this publication has been assembled the names and synonyms of most all of the varieties that have been published in the American literature of the apple for the last century. In assembling these names, nearly fifteen thousand all told, many changes in the nomenclature of the past have been made necessary. Some of these have come about by reason of their conflict, in their original forms, with names that have been discovered as having existed, perhaps for long periods, that had heretofore been overlooked in making up our published lists. Others that have been changed in our revised lists, in order to make them conform to our rules of nomenclature, have not met with popular approval in their changed forms and are therefore practically dead letters, as it were, in our lists. In the original edition of Bulletin No. 56, the work referred to above, the effort was made to sustain these changes by their publication therein, but later and more careful consideration of the subject has led to a desire to restore these to their former names.

### EXAMPLE

“Rhode Island Greening” is so thoroughly well established by reason of its great popularity in certain sections, as to defy all efforts to reduce it to “Rhode Island.” If a shortening up of its somewhat cumbersome name is imperatively demanded by our rules, it would be much easier to make it “Greening,” a name by which it is almost universally known in commercial circles, yet which is not sufficiently definite for our purpose. We, therefore, feel warranted in recommending the restoration of the full and original name (Rhode Island Greening) to this popular variety.

“Smith Cider.” For substantially the same reasons as assigned in the case of “Rhode Island Greening,” we would recommend the restoration of the full name of this old and well known variety.

"Quince, *Cole*," is the form of publication of this variety, as it appears in Bulletin 8, which seems to have been adopted in order to avoid confusion with Quince of Coxe, an older and more fully established name. There now appears to be no obvious reason why this should not be known as "Cole Quince."

"Rome Beauty" is such a popular and well known name, and so euphonic in its expression, that its reduction to the one word "Rome" has not yet met with a popular reception at the hands of the public; besides a variety having the single name "Rome," that originated in Rome, Maine, may be found in Downing's Manuscript, bearing date of 1872. Therefore in order to avoid conflict with this variety, if for no other reason, the full name Rome Beauty should be retained.

"Duchess of Oldenburg." There appears no legitimate reason why this should not be known as "Oldenburg;" yet the reform seems to come slowly. Even some well known and recent writers, who are themselves members of this Society, either intentionally or from habit, seem to adhere to the full name, or, if shortened in the least, to make it "Duchess," a name so commonly applied to various other fruits as to be vague and indefinite within itself. "Oldenburg" is expressive besides giving a *clue* to the origin of the variety, and we think it should be adopted, notwithstanding the well known difficulties of overcoming established usages.

There are many other matters pertaining to this branch of the subject that might be discussed if time admitted, but we must leave them without further suggestion to others who will have had their minds directed to the matter by what has already been said.

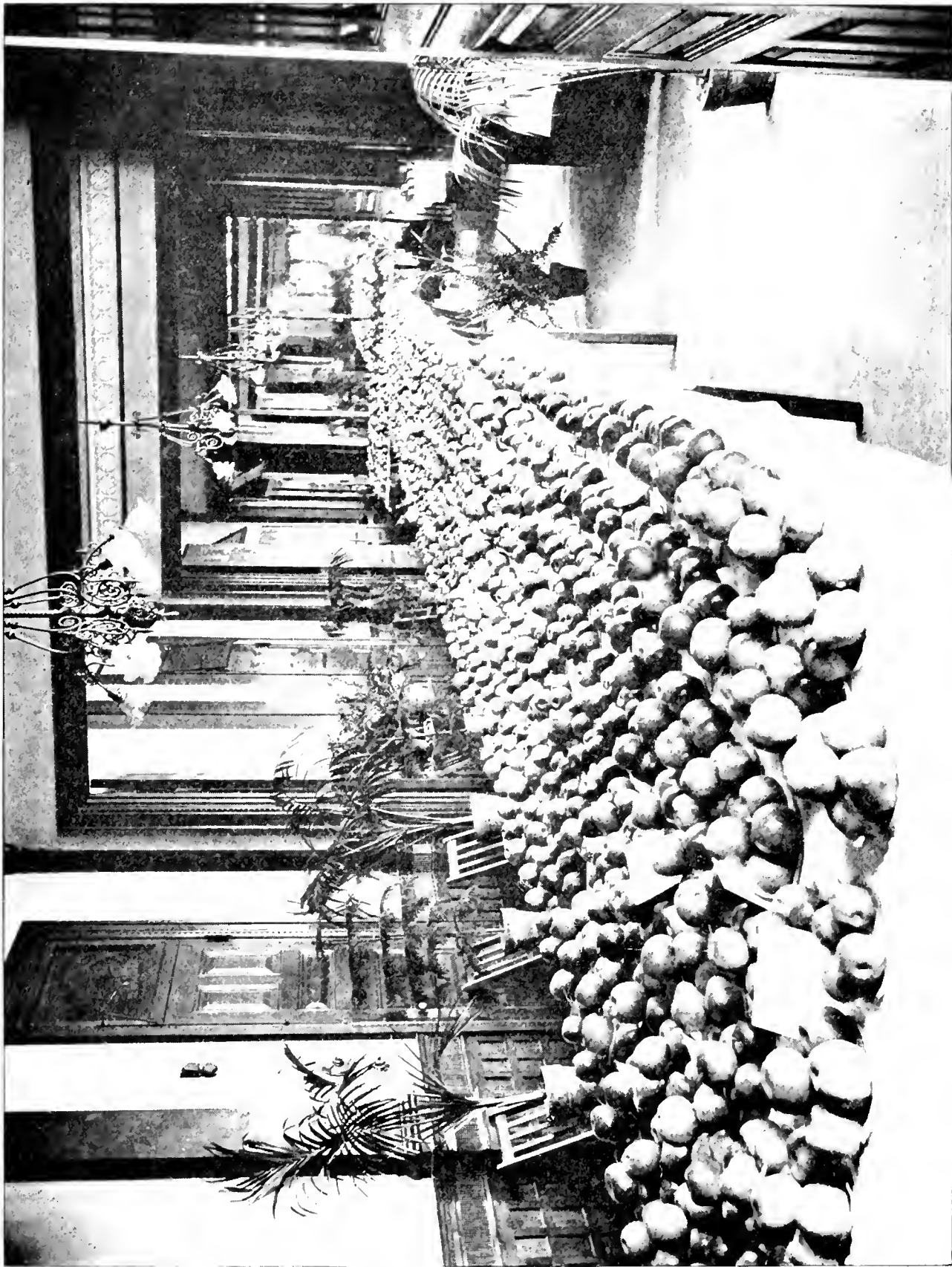
#### NAMING OF NEW VARIETIES

It is very important in this day of rapid multiplication of varieties, for those who are bestowing new names upon their products, to observe the Rules of Nomenclature of this Society, as published. Rule 1 is perhaps most important in this connection. In the absence of complete and accessible lists of all known varieties, the originator will sometimes be at a loss to know just what names have already been bestowed on other varieties of the same class of fruit, and as "no two varieties of the same kind of fruit shall bear the same name," he may find himself under the necessity of making a change, which almost inevitably leads to confusion and trouble. This is especially true if, unfortunately, he has published that name, for "the name first published for a variety shall be the accepted and recognized name, except in cases where it has been applied in violation of this code." We would, therefore, urge originators to observe great care in the selection of names for their new products. In case of the apple, our great standard fruit, the now published list of the Bureau of Plant Industry, of the Department of Agriculture, furnishes a fairly safe guide to originators. To avoid conflict with its voluminous list of published names will generally prevent the duplication of names in their bestowal on new varieties. But a safer plan in the naming of new varieties, even of the apple, would be to correspond with the United States Pomologist, whose suggestions, if followed, would nearly always prevent serious trouble later on.

There is another great source of trouble in our nomenclature of varieties that might be largely, if not wholly, avoided through correspondence with the Pomologist. That is the multiplication of synonyms that grows out of the practice of bestowing names upon already named varieties, either with or without a knowledge of the fact that they are not new varieties. Untold con-







PART OF THE FRUIT EXHIBIT AT THE KANSAS CITY MEETING, SEPTEMBER 19-21, 1905

fusion and difficulties grow out of carelessness in the matter of nomenclature, and we cannot do or say too much in the interest of better and more safe methods.

### III. COMMITTEE ON WILDER MEDALS

REPORT BY

S. A. Beach, Ames, Iowa

Mr. President, Ladies, and Gentlemen: It is with pleasure that I call your attention this evening to the fine exhibit of fruit that has been displayed here during the meeting of this Society. It certainly reflects credit on those who have taken so much interest during a year of discouragement in many places in fruit interests. By way of explanation, as I find that there is more or less confusion upon the subject in the minds of different ones, let me call attention to the fact that this is not a report by the standing committee on new fruits, neither is it the report of the *ad interim* committee. There is a standing committee on new fruits of American origin, consisting of eleven members whose duty it is to pass upon new fruits that are submitted for their examination and to make *ad interim* reports from those that have been submitted to them. This report is the report, as I understand it, on the award of the Wilder Medals. Marshall P. Wilder, who was for so many years the president of this Society, at the time he made his will, bequeathed to the Society \$1,000, the income of which was to be used from time to time for Wilder medals for objects of special merit. He also added a further sum of \$4,000 for other uses of the Society.

I may say that some who have exhibited fruit on the tables, in the judgment of the committee would have been entitled to a higher award had they exhibited a smaller number of plates of a variety and excluded those that were infected with fungus or injured by insects. I do not believe it is the purpose of this Wilder medal to encourage the exhibition of imperfect fruit. Of course we know this has been a hard year and there is some excuse for exhibiting fruit that is not quite perfect, yet I call to mind one collection of a large number of plates of a variety in which I think it was impossible to find a perfect fruit in all the plates of that variety. I believe it would be better for the exhibitor to exclude from the consideration of the committee the large exhibit and put before the committee those plates which show perfect specimens of fruit, even though they would have a fewer number of plates of any variety.

The committee have awarded three silver medals. One to the Missouri State Horticultural Society for a very interesting exhibit, including 68 plates of apples, some from the crop of 1903 and some from the crop of 1904, previously displayed at St. Louis and Neosho, and also including the crop of 1905, 302 plates of apples, 19 of pears and 17 of plums. You understand that the silver medal is the highest medal that is awarded under this provision.

A silver medal is also awarded to Ellwanger and Barry, of Rochester, New York, for a collection of 124 varieties of pears.

Also a silver medal to C. G. Patten, of Charles City, Iowa, for 45 plates of fruit, originated for the most part. There were a few, three I think, named varieties, cultivated varieties that had been otherwise originated, but for the most part these were originated by cross breeding, hardy cultivated fruits. In that northern region it represents a lifetime of effort in this direction by Mr.

Patten, and in the judgment of the committee it is entitled to the award of a silver medal.

We have awarded the bronze medal to an exhibit by Stark Bros., Louisiana, Mo., for a collection of fruit, including pears and apples grown in Arkansas and Washington, some from the crop of 1904, some from the crop of 1905. This is an exhibit which is certainly very fine, the fruit being practically perfect, of high color, uniform in size and shape, and free from blemishes either by insect or fungus.

A bronze medal is also awarded to the collection of the Nebraska Horticultural Society, including 91 plates of apples, 4 of pears, and 5 of grapes.

To Fabian Garcia, of Messilla Park, New Mexico, for the very interesting collection of grapes, apples, and peaches. To C. E. Bassett, of Fennville, Mich., for a collection of 14 plates of apples, 10 plums, 19 pears, and 10 peaches. Including a comparative exhibit of the results of fertilizing some of the fruit grown under similar conditions otherwise, with commercial fertilizer, and other fruit not fertilized, and also comparative exhibit of sprayed and unsprayed fruit.

We have awarded honorable mention to the Ozark Orchard Company, of Goodman, Mo., for a collection of apples. To A. T. Nelson, of Lebanon, Mo., for a collection of apples and pears. To the Kansas State Agricultural College for a collection of apples; to the Department of Agriculture, Miami, Florida Sub-station, for a collection of kumquats, bananas, limes, sugar apples, and avacado. To W. S. Davison, of Hagerman, N. M., for a collection of apples, and to Professor S. McIntosh, of Auburn, Ala., for a collection of persimmons, also recommended for trial. Honorable mention, recommending for further trial, seedling grapes exhibited by E. A. Riehl, of Alton, Ill. One a seedling Niagara, the other a seedling of a Niagara seedling. This concludes the award of the committee. Report adopted.

### DETAILED REPORT OF COMMITTEE ON WILDER MEDALS

S. A. BEACH, G. B. BRACKETT, N. E. HANSEN, COMMITTEE

	Plates	Varieties
J. E. May, Laplatta, Mo.....	5 Apples .....	4
“ “ .....	3 Pears .....	3
Highland Orchards, Springfield, Mo.....	8 Apples .....	4
M. Oliver Cole, Springfield, Mo.....	5 Apples .....	5
Hetherington Orchard Co., Anderson Mo..	26 Apples .....	4
G. T. Tippin, Nichols, Mo.....	62 Apples .....	5
J. H. G. Jenkins, Eugene, Mo.....	34 Apples .....	17
John Frederick, Montreal, Mo.....	6 Apples .....	5
E. Casteel, Stoutland, Mo.....	12 Apples .....	11
Wm. Mooney, Montreal, Mo.....	5 Apples .....	5
L. Test, Montreal, Mo.....	3 Apples .....	3
W. Rogall .....	1 Apples .....	1
John Bansh .....	3 Apples .....	1
Ozark Orchard Co., Goodman, Mo., (Hon- orable mention). .....	115 Apples .....	4
Olden Fruit Co., Olden, Mo.....	11 Apples .....	1
Dan Lowmiller, Parkville, Mo.....	22 Apples .....	22
“ “ .....	14 Plums .....	2
“ “ .....	1 Pears .....	1

	Plates	Varieties
Dan Lowmiller, Parkville, Mo.....	1	Hazelnuts
“ “ .....	2	Pawpaws ..... 1
“ “ .....	3	Buckeyes
J. C. Evans, Harlam, Mo.....	1	Persimmons
“ “ .....	2	Pawpaws
“ “ .....	2	Crabs
Missouri State Horticultural Society. (Silver medal.) .....	68	Apples, crop of 1903 and 1904, previously displayed at St. Louis and Neosho.
Also of the crop of 1905 .....	302	Apples
“ “ .....	19	Pears
“ “ .....	17	Plums
Hon. A. T. Nelson, Lebanon, Mo. (Honorable mention.) .....	3	Apples ..... 46 Pears ..... 3
Raymond Piquet, Dixon, Mo.....		Apples.....
G. M. Williams .....	26	Apples ..... 1
H. S. Wayman, Princeton, Mo.....	2	Apples ..... 2
C. H. Ogden, Warrensburg, Mo.....	2	Apples ..... 2
Henry Crecelius, Mehlville, Mo.....	6	Pears
“ “ .....	2	Peppers
“ “ .....	3	Apples ..... 2
J. C. Ruder, Affton, Mo.....	4	Pears ..... 1
	4	Apples ..... 1
W. P. Keith, Mayview, Mo.....	10	Apples..... 7
“ “ .....	7	Apples..... 5
J. F. Stanley, Princeton, Mo.....	28	Apples..... 28
Stark Bros., Louisiana, Mo.....	116	Apples ..... 5
(Bronze medal.) Grown in Arkansas and Washington; crops of 1904 and 1905. Practically perfect fruit of high color, uniformity of size and shape, and freedom from blemishes, from fungi, or insects.	1	Pears
Chas. W. Stiemman, Dalton, Mo.....	35	Apples
Lizzie Rupert, Ogden, Kas.....	60	Assorted models of fruits
S. J. Baldwin, Seneca, Kan.....	31	Apples ..... 31
Kansas State Agricultural College, Manhattan, Kan. (Honorable mention).....	28	Grapes ..... 28
J. L. Williams, Kansas City, Kan.....	44	Apples ..... 30
(Honorable mention.)		
Nebraska Horticultural Society .....	91	Apples ..... 60
(Bronze medal.)	4	Pears ..... 3
	5	Grapes ..... 4
Dept. of Agriculture, Miami, Fla.....	2	Kumquats
(Honorable mention.)	2	Bananas
	4	Limes
	1	Sugar Apples
	2	Avacado

	Plates		Varieties
Fabian Garcia (and others), Messilla Park, N. M. ....	35	Grapes .....	10
(Bronze medal.)	20	Apples .....	7
	5	Peaches, Seedling	
W. S. Davidson, Hagerman, N. M. ....	8	Apples .....	8
(Honorable mention.)			
C. E. Bassett, Fenneville, Mich. ....	14	Apples .....	14
(Bronze medal.)	10	Plums .....	10
	19	Pears .....	16
	11	Peaches .....	10
Ellwanger & Barry, Rochester, N. Y. ....	124	Pears .....	124
(Silver medal.)			
G. T. Lincoln, Bentonville, Ark. ....	3	bushels of display apples	
C. G. Patten, Charles City, Iowa. ....	36	Apples .....	35
(Silver medal.)	8	Pears .....	7
	1	Plums	
B. A. Matthews, Knoxville, Iowa. ....	3	Pears .....	1
Prof. McIntosh, Auburn, Ala. ....	9	Persimmons .....	9
(Honorable mention.)			
	No.		
E. A. Riehl, Alton, Ill. ....	10	Seedling Grape of Niagara parentage	
(Honorable mention.)	52	Seedling Grape of Niagara quality parentage	

## AWARDS MADE BY THE AMERICAN POMOLOGICAL SOCIETY

Kansas City, September 19-21, 1905

### SILVER MEDALS

Missouri State Horticultural Society, exhibit of fruit—apples, pears, plums.  
Ellwanger & Barry, Rochester, N. Y., collection of 124 varieties of pears.  
Charles G. Patten, Charles City, Ia., collection of cross-bred fruit.

### BRONZE MEDALS

Stark Brothers, Nurseries & Orchard Co., Louisiana, Mo., collection of  
apples and pears grown in Arkansas and Washington, crop of 1904 and 1905.  
Nebraska Horticultural Society, collection of apples, pears, grapes.  
Fabian Garcia, Mesilla Park, N. M. (for Experiment Station), collection of  
Mission grapes, apples, peaches.  
C. E. Bassett, Fenneville, Mich., collection of apples, plums, pears, peaches,  
showing influence of fertilizers.

### HONORABLE MENTION

Ozark Orchard Co., Goodman, Mo., collection of apples.  
A. T. Nelson, Lebanon, Mo., apples and pears.

Kansas State Agriculture College, collection of apples.

U. S. Department of Agriculture Sub-station, Miami, Fla., collection of sub-tropical fruits.

W. S. Davison, Hageman, N. M., collection of apples.

Professor R. S. McIntosh, Auburn, Ala., collection of persimmons.

E. A. Riehl, Alton, Ill., Seedling grapes.

## REPORT OF *AD INTERIM* COMMITTEE ON NEW FRUITS

CHAIRMAN F. M. HEXAMER, NEW YORK

For sub-committee on miscellaneous and small fruits.

George J. Streator, Barrettsville, O. The Cardinal strawberry. No specimens received, but numerous letters of recommendation from persons who had tested it. Inasmuch as this variety has been upon the market for some time, it was not deemed wise to regard it as a strictly new variety, and therefore eligible for recognition.

Hugo Beyer, New London, Henry Co., Ia. Black raspberry, Beyer. A form of the ever-bearing raspberry, and one of the most promising of the type your committee has examined. Samples of fruit were received in various stages of development by the Secretary on September 15, 1904. Recommended for further trial.

Albert F. Etter, Ettersburg, Cal. Ettersburg gooseberry. A small berry which may have certain features of value for the locality in which it originated, but does not commend itself favorably as a commercial variety to the judgment of the committee.

### SUB-COMMITTEE ON GRAPES.

N. B. White, Norwood, Mass. King Philip grape. Specimens received about September 15. Promising, but not in sufficiently good condition to warrant a final report.

E. A. Riehl, Alton, Ill. Seedling grape, No. 10. Grown from seed of Niagara. Special feature, earliness. Somewhat in advance of Morre's early, and apparently otherwise fully equal to that variety. Worthy of further examination and trial.

E. H. Pratt, President T. S. Hubbard Co., Fredonia, N. Y. Seedless grape. Labrusca variety. Further trial.

### SUB-COMMITTEE ON STONE FRUITS.

William Stumpe, Palatka, Fla. Hybrid between Kelsey and Apricot plums.

### SUB-COMMITTEE ON CITROUS FRUITS.

E. S. Hubbard, Federal Point, Fla. Surprise, navel orange. *Recommended for silver medal.* Medal awarded February, 1906.

### DESCRIPTION OF SURPRISE ORANGE BY COMMITTEE.

General appearance, attractive, bright, and smooth. Size, medium. Sample examined would run 150 to 170 per box. Form, variable from slightly oblate to slightly oblong. Color, clear yellow, with well marked indication of a dark reddish orange appearing later. Market value, high. Shipping and keeping quality, first class. Dessert value, first grade. Texture, fine, firm, and meaty.

Flavor, rich and vinous. Quality, excellent. Productiveness, very fruitful, producing well on sour stock, which is not the rule with navel oranges in Florida. Normally hardy and apparently resistant to disease.

Special committee.

G. L. TABER.

H. H. HUME.

G. B. BRACKETT.

The following technical description is offered by Prof. H. Harold Hume, late horticulturist of the Florida Experiment Station:

#### THE SURPRISE NAVAL

Form, rounded or very slightly oblate; size medium, packing 150 to 175 to the box, 2 15-16 inches by 2 15-16 inches, 2  $\frac{3}{4}$  inches by 3 inches; heavy, sinking in water, leaving a space the size of a silver dollar not immersed; color, deep orange; base rounded or very slightly flattened; calyx,  $\frac{3}{8}$  inch across; stem, small; apex navel marked, navel small,  $\frac{1}{4}$  to  $\frac{3}{8}$  inch across, rounded, occasionally flattened or protruding as in Bahia,  $\frac{3}{4}$  inch inside, the rind of the fruit  $\frac{1}{8}$  inch thick, adhering closely; oil cells prominent and slightly elevated above the surface; sections clearly defined, the dividing septa thin; thirteen in number, variable in size; juice sacs spindle-shaped, small; flesh, fine-grained, yellow in color, juice abundant, acidity and sweetness well blended; flavor, rich, vinous; quality, excellent; seeds, none; season, November-January.

#### SUB-COMMITTEES ON POME FRUITS

W. G. Johnson, New York City. Myrick apple. Discovered in Columbia County, New York. Season, September.

Mr. Burton: I wanted to speak of Mr. Whetzel's work this evening. We have old members here that have been commended time and again, they have done noble work, but they cannot do much more. Here is Prof. Whetzel, he has presented to us a wonderful work for a young man, he looks like a boy, although he has told me he is married; but seriously I think we ought to recognize and encourage work of this kind, especially by young men, and young men who have the bright intelligence to catch on to these problems, things that the rest of us have missed for years, certainly deserve to be encouraged, and I hope that Prof. Whetzel will not take the silence of the meeting as thinking that he has not done much. I shall be glad to move a vote thanks. Seconded by Mr. Dutcher and carried.

Mr. Whetzel: I very much appreciate the kind words and the vote of thanks which the members have offered me, and I trust that I will be able later to add more to what I have already done, and I want to say that if I can be of any service to you at any time, wherever you are, in the matter of canker, or other fruit diseases, just write to me and I will do my best to help you.

#### FINAL RESOLUTIONS.

The report of the committee on Final Resolutions was then read by Mr. Kirkpatrick, and on motion of Mr. Beach, was adopted.

The committee on final resolutions beg leave to report as follows:

1st. That the thanks of this Association are due to the officers and members of the Missouri State Horticultural and to those of the Missouri



Valley Horticultural Society for the courtesies they have extended to our Society and for the able and delightful way in which they have carried out the many difficult and burdensome details which have contributed so very much to the success of this biennial convention.

2d. That this Association appreciates the able and entirely satisfactory way in which the management of the Coates Hotel has administered to the needs of this Association.

3d. That this Association feels under great obligations to the citizens and and commercial organizations and the Kansas City Steel Ry. Co., of Kansas City, for the many delightful courtesies we have received at their hands.

4th. That this Association is grateful to the Kansas City Southern and Frisco railroads for the opportunity of seeing the great fruit growing sections of Missouri and Arkansas.

5th. We owe our active Chairman our best thanks for his kindness in so ably presiding over the deliberations of this body.

E. W. Kirkpatrick, Ch.  
Chairman.

Mr. Kirkpatrick: We have still another resolution to report:

WHEREAS: It having become apparent to those engaged in growing and shipping fruit to the markets, that the excessive charges demanded for the use of refrigerator cars, and for icing the same by the Armour and other refrigerator car companies are ruining the fruit industries of the country.

Therefore be it *Resolved*:

*First*, that we respectfully submit that the various railroads over whose lines fruit and garden products are carried, should procure and furnish all shippers with refrigerator cars and require shippers to pay no more than actual cost for icing cars, to the end that this great industry be encouraged. Thus promoting in the end the interest of both producer and carrier.

*Second*, that the American Pomological Society now in session most heartily endorses President Roosevelt's efforts to secure governmental regulation and control of Interstate commerce through a properly constituted commission, to the end that many of the greivous evils now so seriously complained of by producers and shippers, be abolished, and a square deal secured to producers and consumers.

*Third*, that we most earnestly and respectfully request and urge all Members of Congress from our respective States to give their influence and vote to accomplish the ends sought, as named above.

We recommend this resolution for adoption.

BY THE COMMITTEE,  
E. W. KIRKPATRICK, Ch.

Mr. Kirkpatrick, moved the adoption of the recommendation. Carried.

Mr. F. M. Dickson then offered a resolution in regard to Kansas City papers, which, on the suggestion of Mr. Goodman, was laid upon the table.

Mr. St. John offered a resolution regarding statements of Kansas City papers with reference to the Ben Davis apple, which was also laid on the table.

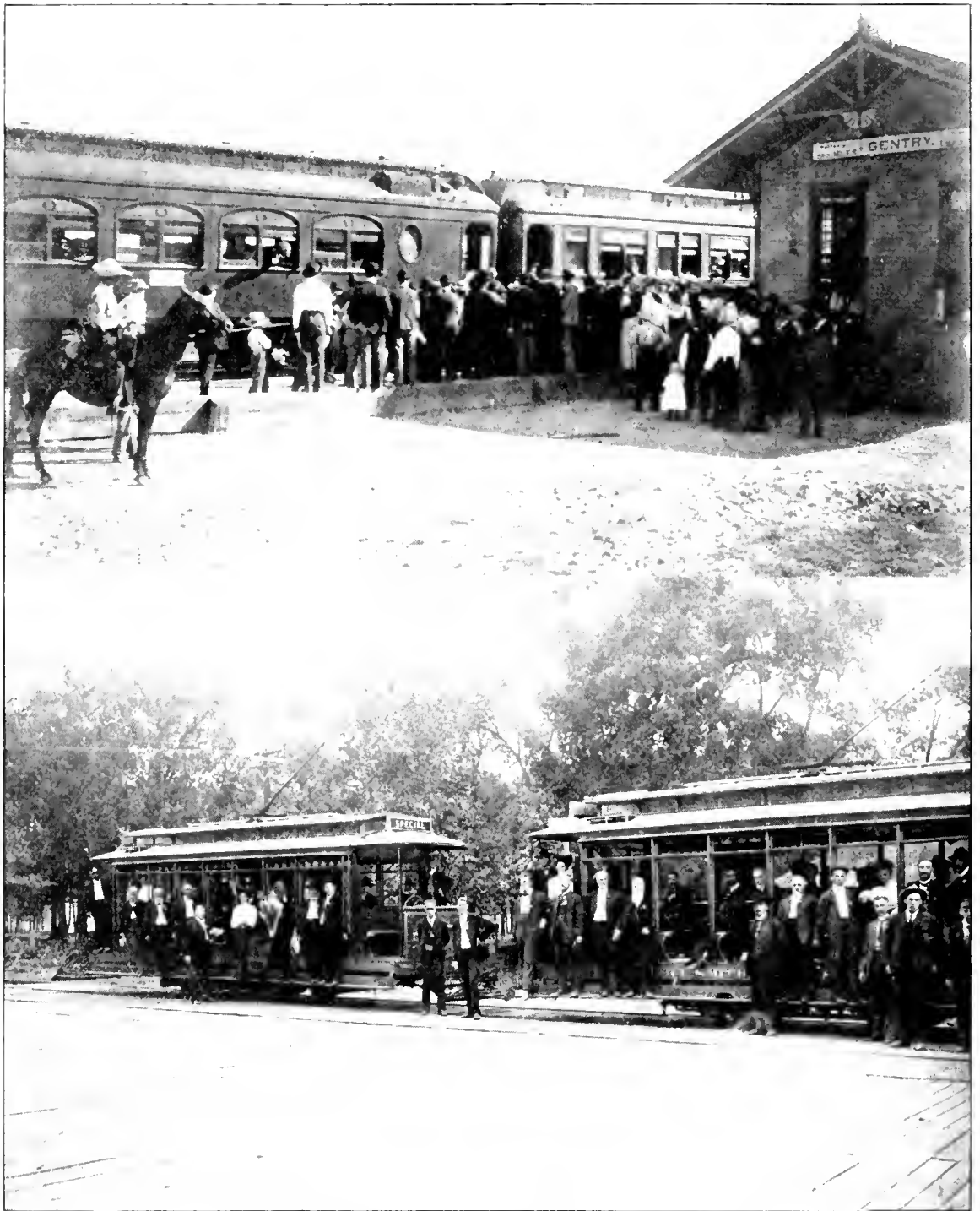
The Chairman: To take up the local quarrels, or the slurs of a daily paper, say if you like that they are unjust, is something that this Society has never done in all the more than half a century of its life. It does its work according to its best judgment, its judgment has never been questioned by any responsible

person or horticultural body on earth, so far. Now we cannot drop our dignified position and enter into any war of words with a newspaper which has all the advantage and against which we are as powerless as possible. I am glad of the action you have taken.

A motion by Mr. Ragan, that a vote of thanks be extended to the musicians for the excellent music furnished during the meetings was carried unanimously.

Adjournment.





OZARK EXCURSION LEAVING GENTRY, ARKANSAS  
TROLLEY RIDE FORT SMITH, ARKANSAS

EXCURSION TENDERED BY THE  
KANSAS CITY SOUTHERN AND ST. LOUIS  
AND SAN FRANCISCO RAILROADS

By the Secretary.

The excursion itinerary, as announced in the program, was carried out with the utmost precision and harmony. The special train of two Pullmans left Kansas City at eleven o'clock on the night of Sept. 21st. The train was usually attached to regulars at night, but ran as a special in daytime. Each railroad was represented by its own special agent who looked after the comforts and necessities of the passengers in a most acceptable manner. The person, however, to whom unstinted thanks and fullest recognition possible for indefatigable effort should be given, is Mr. L. A. Goodman who shouldered a great deal of responsibility in connection with the educational and social details of the tour. His complete familiarity with the region and its resources added tremendously to the pleasure and profit of the trip.

PLACES VISITED.

*Neosho.*—A night run from Kansas City brought the excursionists to Neosho, Mo., at six o'clock on Friday morning. This place has three great attractive features. The natural springs of Neosho are noted in all the western country. As a strawberry-growing center, it is also famous; and as a government station and fish hatchery, it is also well known. The visitor enters the Ozark region at this point.

*Gentry.*—From Neosho to Gentry, the train carries the visitor, in many places, through continuous stretches of hilly and mountain land largely planted with apples and peaches. Apples predominate, however. An exceedingly pleasant feature of the visit to Gentry was the reception of the excursionists by a committee of citizens with a brass band and aided by several hundred school children who received and welcomed them with the Chautauqua salute. One is impressed with the thrift and progressiveness of the fruit growers of this region. The soil is light and porous, flinty and shaly in places, but apples seem to thrive. The horticultural exhibition and fair were in progress at Gentry, and the visitors had an opportunity of studying the natural products in a satisfactory manner. Mayor C. C. Lale, Banker Wasson and others were unremitting in their efforts to make the visiting fruit growers comfortable and to give them all information regarding the resources of the country that it was possible to offer.

*Siloam Springs.*—Arriving at this interesting town, named on account of the number and importance of the streams which arise spontaneously in the region, the members of the party were driven some ten or twelve miles through the apple and peach orchards of the vicinity. One of the most interesting orchards seen was that of Mr. T. H. Lee where an example of the possibilities of

industry and perseverance was demonstrated. The extensive orchard, comprising 260 acres of apples and peach trees, has lifted Mr. Lee from the dependent position of a man with a mortgaged farm to the independent situation of the owner of a highly profitable and productive enterprise. Hospitality and good cheer and kind expressions were dispensed at a pleasant evening reception. The scenery about Siloam Springs is exceedingly picturesque, and with such excellent agricultural surroundings the future of the place seems assured.

*Horatio.*—Another night run from Siloam Springs carried the party to Horatio, the most southernmost point touched on the tour. This is located about forty miles north of Texarkana, marking the boundary between Texas and Arkansas. The objective point here was the great peach plant of the Southern Orchard Company, whose guests the Pomologists were while in this vicinity. In one block at this place, there is found three thousand acres of Elberta peaches. These are planted in sub-divisions and for the purpose of selling or renting to in-coming or would-be fruit growers. Part of the orchard has just commenced to bear. It will be interesting to see how a great area like this composed of one variety will be handled when it comes to fruiting.

*Mena.*—At Horatio, the train turned northward once more, and the next stop was at the beautiful and youthful town of Mena. This lies in a region of wonderful scenic and æsthetic possibilities. There are two levels in the land. The lower or table-land a horse-shoe shaped area, many hundred acres in extent, is occupied by the business portion of the town. This is surrounded and largely enveloped by an escarpment rising from a hundred to a hundred and fifty feet in height above the lower level and presenting another more or less level upper surface. This border escarpment furnishes a delightful residence area. The fruit growing possibilities of the region are just being developed. The town is occupied by progressive, vigorous men and has the promise of a great future. At this place, Mr. A. W. St. John was one of the active hosts who was largely instrumental in bringing about the impromptu meeting held on Saturday evening.

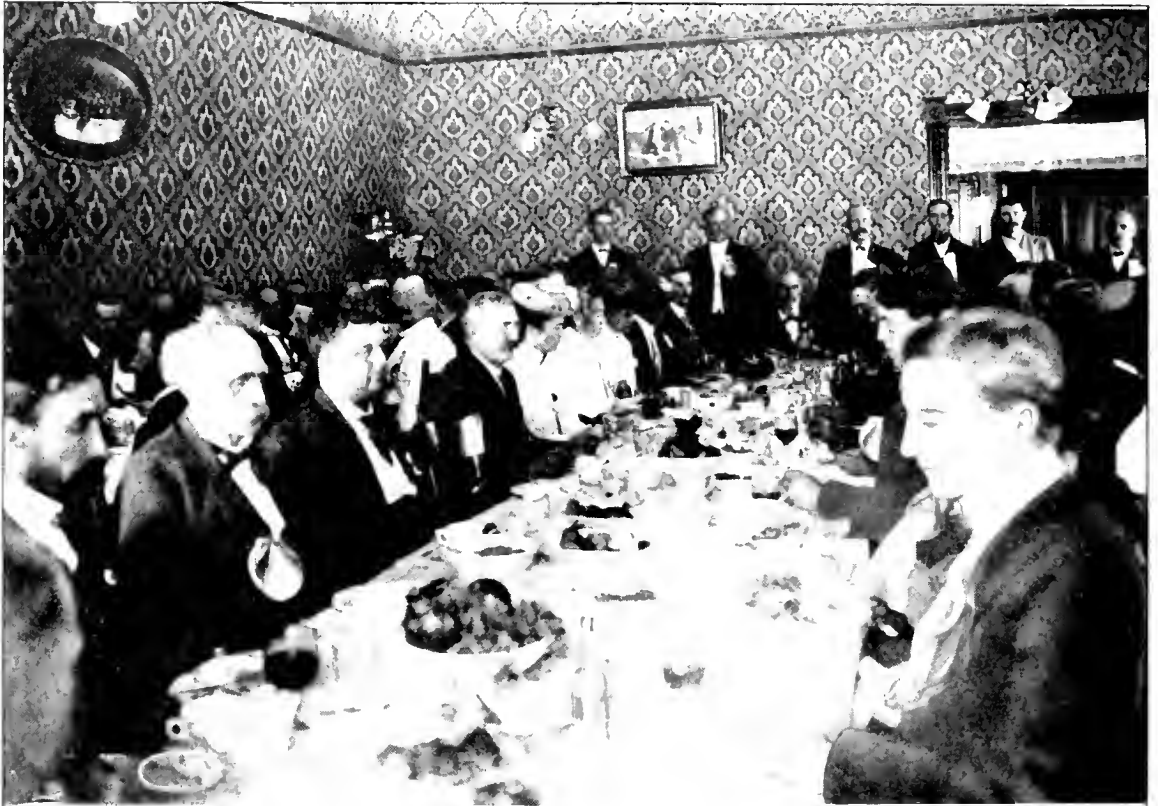
*Fort Smith.*—A night run from Mena brought the excursionists to Fort Smith, where Sunday was passed. Here they partook of the hospitality of the Fort Smith Electric Traction Company and visited the interesting park owned by that organization.

#### CHANGE TO FRISCO RAILROAD.

The cars were transferred on Sunday night to the tracks of the Frisco Railroad, and at six o'clock Monday morning the Pomologists found themselves at the college town of Fayetteville, Ark., where, after breakfast, the party visited the State College of Agriculture and Mechanic Arts and the Experiment Station under the leadership of Vice-President Vincenheller and Professor Ernest Walker. This town being in the region of the Ozark uplift, the conditions for orcharding are exceedingly favorable and the scenery most picturesque.

*Bentonville.*—After a short stop at Rogers, the party made a more extended visit to Bentonville where they were entertained by the Commercial Club and where an extended drive through the orchards of the region was taken under the direction of Judge J. B. Lawton and other members of the reception committee. One of the principal orchards visited was that of Captain G. T. Lincoln. This apple orchard, about ten years old, seems now to be in full bearing. It is composed of Grimes, Ben Davis, Etris, Ingram and York Imperial. Captain Lincoln believes in occasional cultivations rotated with the mulch system.





THE OZARK EXCURSION. ENTERTAINMENT

SCENERY

A TREE OF INGRAM IN  
CAPTAIN LINCOLN'S ORCHARD



This latter plan he practices very thoroughly. It was certainly one of the best-cared-for and most promising orchard plants seen on the trip.

*Thayer and Koshkonong.*—Swinging back to Springfield, the excursionists were taken to see the beautiful and imposing Mammoth Springs, not very far from that place. This immense amount of water welling out of the ground, forming immediately a stream of large dimensions and giving power under unemployed and yet unmeasured for great industries, is an impressive sight. After breakfast at Thayer, a brief stop was made at Koshkonong in the midst of a somewhat recently and rapidly developed peach-growing region. Here an address was given by Judge Green who told the party that over five hundred thousand peach trees have been recently planted in that vicinity. Good evidence of the truth of the statement was to be had by simply looking on either side of the track from the car windows.

*Brandsville.*—A stop, not scheduled, was made at this place to see an exhibit of fruit prepared at the winery of Mr. George W. Ferguson. This is a grape-growing center and vineyards are prominent features on the landscape. Extensive wine cellars of the Brandsville Fruit and Wine Co. were visited and the hospitality of the managers partaken of.

*West Plains.*—Arriving here shortly before noon on the morning of the 26th, the party was met by Mr. A. T. Hollenbeck, secretary of the Commercial Club, and a large delegation of citizens. The citizens had taken the trouble to arrange in the Town Hall a fine display of fruits and grains grown in the immediate vicinity, and after examining these, addresses by residents of the town and visiting members were presented. It may be said in passing that this formality of speeches was indulged in at almost every place visited by the party. Following the examination of the display of fruit and the addresses, came a satisfying banquet at one of the leading hotels.

*Mountain Grove.*—One of the most interesting stops made on the itinerary was that at the State Fruit Experiment Station located near the crest of the Ozarks in a delightful situation from the standpoint of scenery and healthfulness. Here the party was met and entertained by the director of the Experiment Station, Mr. Paul Evans, son of Colonel J. C. Evans, so well known in Missouri horticulture. A drive through the Experiment Station grounds revealed a great many features of interest to the horticulturist. Cover-crop experiments were examined, and plant-breeding studies were splendidly illustrated in apple and plum orchards. It should be said that the cross-bred apples now coming into bearing at this Station, promises great things for the future of apple-growing in the Ozarks. Following the visit, to the Station grounds, the excursionists were entertained by the citizens of Mountain Grove at a park supper where trees and plants lighted with Chinese lanterns, made a fairyland of the situation. Leaving Mountain Grove at nine o'clock, the train was taken to Springfield where it was attached to a regular and carried to Kansas City, arriving there at seven-thirty on the morning of Sept. 27th.

The thanks of the Society are not only due to the railroads furnishing transportation, but to the special agents in charge of the train. To Mr. J. H. Morris, of the Kansas City Southern Railway, and Mr. C. O. Jackson, of the St. Louis and San Francisco Railway, unstinted praise should be given for their unremitting attention looking toward the comfort and pleasure of the party entrusted to their care.

Space does not permit of a record being made of the thousand and one interesting incidents of the trip—of the recognition that should be given those who assisted in entertaining the visitors locally and the various members of the

Missouri Horticultural Society who assisted Mr. Goodman in ministering to the comforts of the delegation; of the special features such as brass bands at Gentry; of badges here and there; of reception committees at all places and of the general spirit of hospitality and cordiality which characterized the hosts and hostesses of the places visited. These and many other things made the tour a feature in the minds of those who participated in it that will not be blotted out in a few months, or even years of bustle in this busy world, but will make it stand out as a social and educational epoch in the convention history of the American Pomological Society.

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## A SKETCH OF THE OZARK FRUIT REGION OF ARKANSAS AND MISSOURI.

JOHN CRAIG.\*

1. *Location and Area.*—This is a much larger region than is ordinarily supposed. Its approximate boundaries are something like these. Northwest, Missouri and Osage Rivers. East by the St. Francis. South by the Arkansas. It is then an irregular shaped oval running southwest from the center of Missouri, covering a stretch of territory practically equal to the state of Missouri and lapping the two states mentioned in addition to Indian Territory.

2. *Geology and Topography.*—The geological history of the country is interesting. In it are found representatives of every geological age from the Archæan to the carboniferous inclusive. Limestone varying in character from the disintegrating form to the flinty shale is the predominating rock formation. Broken shale, sandstone and here and there granitic formation are found outcropping.

The designation Ozark Mountains gives the impression of a prominently elevated region, but the country is not truly mountainous. In this region the term is strictly relative. The elevations in the Ozark uplift vary from 800 to 2,000 feet. These elevations are exceeded in central New York by many of the unimportant hills surrounding and contiguous with the Finger Lake system. For instance from the University campus at Ithaca, eminences rise to the eastward to the height of 2,000 feet. In this region these are regarded as hills. In the plains country of middle west they would be called mountains.

One of the distinctive features of this interesting Ozark country is the surprising and spontaneous way in which streams break forth from the limestone strata. In southern Missouri and northern Arkansas these occurrences are numerous and noteworthy.

The elevations may be thrown into two groups, the lower levels following the stream valleys and the upper levels, the side hills and plateaus which the orchardists are climbing in setting trees.

3. *History.*—Like all mountainous regions the hillier portions attracted the settlers last, so that the settlement of this country is comparatively recent which in a measure accounts for the tardy exploitation of its fruit resources. Along the Arkansas and its tributaries, apples and peaches came with the early settlers, and from this region emerged the seedling varieties that have done more perhaps than anything else to attract the fruit grower to the region.

Measured by years, the fruit growing of the Ozarks in its commercial phases

\* Abstract of an address before the New York State Fruit Growers' Meeting at Lockport.

is less than a quarter of a century old. Apples and peaches have been successfully cultivated for many years, but the commercial plantings have practically all occurred within the last twenty-five years and the heavy development of the country within the last fifteen years.

4. *Types of Fruit Growing*.—Apples and peaches are the staple crops. Other fruits are grown here and there to a somewhat limited extent. But the crop of the country is the apple. In the middle elevations of Arkansas the peach industry leads. Especially is this a fact where one finds the sub-soil to be of the red or chocolate clays of Georgia and South Carolina. This type of soil which prevails in the southern extremity of the Ozark uplift marks the region in which the heaviest plantings of peaches have taken place. In the region of Horatio some 40 to 50 miles north of Taxarkana an orchard company with headquarters at Kansas City has made the enormous planting of 3,000 acres of one variety of peach, the Elberta.

Again at the northern end of the area in Missouri grapes are here and there considerably in evidence.

5. *Methods of Orchardings*.—The fruit grower from the East is struck by several important features in looking over the apple orchards of this region. First, distance. Trees are planted from 20 to 30 feet apart, 60 to 70 trees per acre. Second, very little pruning is done. Third, comparatively little tilling is done. In fact the ground is so stony in many places that surface tillage to the man accustomed to sandy or loamy conditions would seem impossible. The surface of many orchards in the side hill region is covered with loose shaly stone. Fifth, the trees come into bearing early. Sixth, they appear to age young. The above remarks apply to apples.

Peaches. The methods of tilling and handling the peach tree do not differ materially from those in vogue in the East with perhaps the exception that less heading in is done each year.

6. *Varieties*.—Apples. The king of the region is Ben Davis. The varieties which follow are those held in greatest popularity by the heavy planters.

First choice. Ben Davis, Gano, York Imperial, Jonathan, Grimes, Ingram.

Second Choice. Huntsman, Willow, Pippin, Winesap, Ralls.

Peaches. The variety selection of peaches is a compromise between the lists of the south and those of the east. The Chinese strain predominates and is most successful. The Crawford type is not cultivated to any considerable extent.

Elberta, Belle, Carmen, and Smock are as popular as any, but probably more Elbertas have been planted in the last five years than of all other varieties combined.

7. *Markets*.—The great cities of the middle west are the consumers of the big red apple of the Ozarks. Chicago, Omaha, St. Louis, and other river towns appreciate perhaps more fully the qualities of the apple and peach products of this region than do the cities of the East.

Certain it is that for such apples as require warm soil, fervent day heat, with relatively cool nights, the conditions in the region under discussion are most favorable, and the Den Davis of the Ozarks is a different and better creation than the Ben Davis of New York or New England.

The region is being rapidly developed but it does not follow because apple and peach trees are being planted there by the hundreds of thousands that it is going to dominate the apple-producing region of the United States. There are drawbacks here as elsewhere. Cold rains and unfavorable spring conditions have blasted fruit prospects for three consecutive years. At the time of

my last visit about the end of September most of the trees on the lower levels and many of them on the higher grounds were entirely defoliated. This early fall of the leaf was attributed to excessive rains of midsummer, but I am of the opinion that the rain theory was only a partial explanation and that fungus troubles were as much concerned in the matter as climatic vagaries.

In this connection it is worth noting that many of the Ozark fruit growers have, on account the small stature of their trees, the hilly and irregular surface of the ground, adopted the dust or dry spray method of combating insects and other plant parasites.

The conditions which affected the apple crop have also been prejudicial to the peach crop, and small yields have been the rule for the last two or three seasons.

Perhaps the principal lesson to be learned from a visit to this section is that while success is in generous measure to be ascribed to favorable soil and climatic conditions, yet the real thing underlying the fame of the region has been the fact that the fruits which have given it its name, are products of its own environment. They have survived by reason of special qualities and characters. These good points are in a measure intrinsic but are developed largely in response to the niceties of adaptation. Because these varieties succeed under Ozark conditions is no reason that we in the East should conclude without trial or experimental data that they will be equally successful here. I shall look for a modification of the methods of orchard management now prevailing in this region in the not distant future. Fruit tree planting is now of the temporary type. As time goes on it will take on phases which will tend to make each orchard more stable and lasting.

The fruit growers of the region are energetic hospitable people. Visitors are welcomed and entertained with true western heartiness. This great section is bound to develop, but present fruit growing methods will probably need modification as time goes on.





THE OZARK EXCURSION  
THE LADIES OF THE PARTY AT MOUNTAIN GROVE STATION  
SOME OF THE MEN OF THE PARTY IN CAPT. LINCOLN'S ORCHARD

# Report of the General Fruit Committee

S. A. BEACH, CHAIRMAN.

The report of the general fruit committee herewith presented, includes some very interesting and valuable reports by State and Provincial Fruit Committees of this Society. These reports evince earnest effort on the part of the several sub-committees to do good service in behalf of the Society. They are worthy of careful study.

In making these reports, each Committee was urged to treat those subjects which appeared to them to be of most importance. At the same time it was suggested that the topics mentioned below were apt to be of general interest.

*Fruit Industries.*—Status of pomological industries. Regions in which fruit growing is developing. Regions in which any fruit interests are declining. Statement of conditions contributing to these changes. Fruits under glass.

*Marketing.*—Changes in methods of marketing and reasons for same; for home markets; for foreign markets.

*Varieties.*—Adaptation of varieties. What varieties reach highest excellence in the various fruit regions in your State.

Trend of planting, whether towards high-class varieties or towards commercial kinds.

The keeping of varieties in cold storage.

Suggest any change which seems desirable in the description or rating of varieties as given in the Society's report for 1901.

Should any varieties be added to that list or be dropped from it?

Give detailed description of new varieties which are worthy of attention.

*Orchard Management.*—Irrigation; tillage, mulch, or sod; cover crops, training, pruning, fertilizers, implements, frost protection; any improvements in orchard management.

*Insects and Diseases.*—New or noteworthy information concerning plant diseases or injurious insects and methods for combating such pests. Legislation. Inspection. Any problems connected with the enforcement of inspection laws.

*San José Scale.* Has the advent of the San José Scale discouraged the planting of orchard trees. If it has detracted from the commercial value of any fruit, state the kinds and the extent to which they are affected. Give status of treatment in commercial orchards.

From these reports it appears that in a few regions fruit interests have declined to some extent during the last biennial period, either because of changed economic conditions, or because of climatic difficulties; during the same period in other and quite extensive portions of the country, there has been little or no change in the status of fruit growing; but in many other regions, and particularly in certain sections of Pomological District No. 4, a district which extends from the Virginias, the Carolinas and Georgia, westward through south Missouri, and north Arkansas into Indian Territory and Oklahoma, planting has been active, especially the planting of peaches and apples, and many new orchards have come into bearing. Also in some of the fruit districts of Colorado and of the Pacific Coast States there has been notable activity in the extension of orchard interests. In Louisiana pecan culture is attracting much attention, while

in Florida peach growing and small fruit growing are actively developing, and in Southern Florida, pineapple culture and citrus culture are being extended.

On the whole, the fruit interests of the country have seen distinct advancement during the last two years. At the same time, the facilities for handling and storing fruit have improved, and some progress has been made in the practical operations of controlling injurious insects and fungus diseases by spraying and otherwise.

While cultural problems and the question of varieties still claim considerable attention, fruit growers as a class are showing relatively greater interest than ever before in the distinctive commercial side of their work, particularly in questions concerning the packing, storing, transportation and marketing of the crop. Chairman Wolverton of Ontario, writes:

"Fruit growers in Ontario are dissatisfied with present methods of sale. Fruit is shipped on commission to small places as well as large, and retailers no longer buy with confidence, expecting that any train may bring a car load to be sacrificed to their own prices. Co-operative packing companies and f. o. b. sales are the chief topics of discussion, and we hope some improved methods will result."

Chairman Mann of New York writes:

"In the Ontario fruit belt, extending from the Niagara River eastward along the southern shore of Lake Ontario, in which the already great acreage of apples and other orchard fruits is being continually increased, cold storage houses are being multiplied on every hand, . . . and now the greater part of the product of the apple orchards is purchased by dealers who hold the fruit in store for favorable market conditions. . . . In the Chautauqua grape district, the concentration of interest upon one product, makes associated effort of growers in the marketing of that product practical and even necessary."

Chairman Whitten of Missouri states:

"Possibly the greatest interest centers to-day along the line of cold storage and improvements in marketing and handling, which have been an outgrowth of better developed methods of storage. A larger and larger number of our fruit growers are storing their highest grades of apples, and securing a higher priced market for them in late winter or early spring. . . . A marked development in the organization of fruit shippers' associations is a prominent feature of recent years. This is particularly true in districts where berries and perishable fruits are being grown. From the influence of these associations, a more rational distribution of berries and perishable fruits planted by each man has been brought about. . . . Much more attention is given to the proper grading of berries, and less bad fruit is put upon the market. . . . The tendency is growing to sell fruit on track to buyers."

Attention should be called in particular to the remarks of Chairman Sears of Nova Scotia, concerning the effect of the Fruit Marks Act; the history and purpose of this act were clearly set forth by Mr. Mackinnon at our last Meeting.\*

Professor Sears remarks:

"But while packages have changed but little (during the last biennial period), the care and honesty with which apples are packed have materially improved, owing largely to the influence of the Fruit Marks Act. This has been brought about partly through fear of detection among the few who originally packed the fruit fraudulently, but principally the educational effect of the law. This

\* Mackinnon, W. A., "Fruit Inspection and Export Trade."—*Proc. Amer. Pomo. Soc.*, 1903. \$7.



educational influence has been exerted partly by the inspector and others who have given "demonstrations" of the proper way to pack a barrel of apples, and partly by arousing a general interest in the subject of packing, which has led growers to give it more attention on their own account.

Commencing on this subject, Chairman Knowlton, of Maine, writes:

"The lesson taught us by Canadian fruit the last two years, shows us that quality wins in the end; the influence of the Fruit Marks Act is so apparent as to make certain that when the fruit marks are correctly made they are of great value in the market, and will take precedence in price. Fruit growers in this State have been discussing the matter, hoping there might be some way in which the fruit marks of Maine apples might serve the same end as the Canadian fruit mark. Some have proposed a State law, similar to the Canadian, while others, seeing the difficulty of enforcing such a law, hesitate and say: The law should be national in order to secure similar results. There is no doubt a national fruit marks law would help not only Maine fruit growers, but the fruit growers of every States as well. Let us unite in asking Congress to give us such a law."

The report of Chairman Henriksen of Porto Rico is worthy of special consideration. The method of handling Porto Rico citrus fruits has been greatly improved, but the shipping facilities are as yet very inadequate. Citrus fruits have been planted extensively during the last two years, and it is estimated that there are now about 10,000 acres under cultivation. Coffee is one of the general products of Porto Rico. Mr. Henriksen inquires why it is not listed in catalogue of fruits of this Society. A Horticultural Society was formed recently which will no doubt be glad to co-operate either with this Society or with its individual members. Any information desired along this line will be gladly forwarded by Mr. Henriksen.

## COMMERCIAL FRUIT GROWING IN TENNESSEE.

By Charles A. Keffer.

Perfect facilities of transportation have made of the entire United States a potential fruit garden. The most perishable crops are within reach of the great centers of consumption, however remote the lands on which they grow. New York and Chicago no longer depend on Delaware and Michigan for their peaches. Duluth folk may begin to eat Florida strawberries at Christmas and every day thereafter the luscious berries seem to move nearer and nearer, until, in July and August, their own gardens supply the breakfast table.

And so, in widely separated states the extensive methods of the cotton and corn planter have given place to the intensive practice of the fruit grower, and almost every state in the land has its important centers of horticultural production.

In the South the development of the fruit and trucking industry is a matter of the past three decades.

In the Middle South hardly ten years has passed since the first carload of berries was shipped—since the first commercial orchard was planted. Tennessee, slow to enter the horticultural field, has made a name for herself only in the strawberry and truck markets, but already she has orchards rich in promise, that seem to warrant the assertion heading this article—Tennessee is a potential fruit garden.

It is not my purpose to compare conditions here with those in other states,

nor to assert the horticultural superiority of Tennessee, but only to call attention to what has been done as an index of what may be accomplished.

Tennessee is a state of great variety in soils, elevation and climate. The highest mountains of the Appalachian system mark its eastern boundary; the broad alluvial plains of the Mississippi Valley are included in its western limits, and the center of the state is a rich agricultural region separated from the east and west by an extensive highland similar in general character to the Ozark country of Missouri.

In West Tennessee, particularly along the line of the Mobile & Ohio railroad, the truck farmer has taken the place of the cotton planter. Strawberry fields of forty or more acres are not uncommon, and early cabbage, snap beans, tomatoes, and potatoes are the export crops in place of corn. The strawberry was the pioneer of horticultural crops in this section, and it remains the principal one. Second in importance is the tomato, which is ready for shipment when the strawberry is out of the way—reaching northern markets between the early shipments from the Gulf states and the home-grown fruit. The Irish potato produces two crops a year, and there are growers who plant 160 acres to this crop alone.

Climate and soil are alike peculiarly favorable for these crops. The winters are so mild as to permit the planting of potatoes and cabbage in February, and the growing season is so long that many vegetables yield two crops a year.

Hamilton, Bradley, and Rhea counties comprise an extensive strawberry and trucking area in southeast Tennessee, known as the Chattanooga district. Here as in the western part of the state strawberries are shipped from many stations by the carload, and vegetable growing is becoming an important business. This district is forging to the front, also, as a peach region. Over 500,000 peach trees having been planted in Bradley county alone in the past three years, while extensive peach orchards cover the ridge lands of Rhea, Roane, and Hamilton counties.

Orcharding as a whole is less developed than trucking in the state. The Keiffer pear has been quite largely planted, and orchards of a thousand trees or more of this variety are found in Hardeman, Carroll, and Gibson counties, while everywhere the tree is seen in home gardens. Blight has done havoc in the Keiffer orchards, this year especially, and growers generally do not consider it profitable.

In Tennessee peach growing is confined to frost-free localities having a sandy or gravelly clay soil. Such places are not generally over the state, and it is not probable that Tennessee will ever rival Georgia in peach production. While this is true, there are large and profitable peach orchards in Bradley, Rhea, and Claiborne counties, and extensive young orchards of much promise are found in Coffee and Houston counties. The higher lands in Davidson and adjoining counties produce peaches in sufficient quantity to warrant more extensive planting. There is little doubt that experiment will prove a much wider area adapted to the peach than has yet been so considered.

The planting of cherries and plums is receiving increased attention in the state. Growers in Knox and Maury counties having several thousand bearing cherry trees regard this among the most profitable fruits and are adding to their plantations. The clay lands of the Highland Rim are especially adapted to cherry and plum production. Japan plums seem to be favored in the western part of the state.

Tennessee is near the southern limit of successful apple production, and this has led to the planting especially of early varieties for northern markets. Trans-

parent, Harvest, Astrachan, and Red June are the favorite varieties, and while the demand for early apples may not be great, it is thought there is a promising field here that is yet to be worked. In the higher coves of the Smoky Mountains on the eastern border of the state all standard varieties of the apple succeed, though they are not grown commercially, principally owing to poor transportation facilities. The same is true to a great extent of the Cumberland Plateau, a region of several thousand square miles, where a few orchards of 20 acres or more indicate success when right treatment is given.

CHARLES H. KEFFER.

## NOVA SCOTIA.—POMOLOGICAL DISTRICT I

F. C. SEARS, CHAIRMAN

I think I can truthfully say again, as I did in my report two years ago to the American Pomological Society, that fruit growing has steadily progressed in Nova Scotia during the last two years. They have not been as successful years as several which preceded them, but the industry has grown notwithstanding. The crop of 1904 was large, over 400,000 barrels of apples being exported, but the quality was only medium and prices ruled low. This year, 1905, there will be a very light crop (from the best estimates now obtainable about 250,000 barrels), with quality good and prices promising well. The effect of these two seasons has been not to depress the industry, but rather to steady it; to take away any tendency towards a boom, but still leave a good, healthy interest.

The government "model orchards," of which there are now twenty-nine in the province, are each year increasing in value to the fruit industry. They are stimulating an interest in better methods all along the line and are inducing the planting of new orchards. They are also beginning to give some valuable data as to varieties adapted to each locality. Most of the Japanese plums are proving too tender to stand the climate of the colder section and the Wickson has been dropped as a possibility not only in the model orchards in the outlying sections of the province, but even in the Annapolis Valley. The varieties of apples which are proving most generally successful in the colder sections of Nova Scotia are the following: Yellow Transparent, Wealthy, Ribston, Baxter, McIntosh, and Stark; while the ten most popular and largely grown sorts for the Annapolis Valley and other more favored sections would probably be Gravenstein, Ribston Pippin, Blenheim, King of Tompkins, Northern Spy, Baldwin, Golden Russet, Stark, Nonpareil, and Fallawater. Ben Davis and Gano are being planted to a considerable extent as market sorts, more than they ought to be in the writer's opinion. Yet on the whole the tendency among planters is, I think, to hold to the better quality varieties.

With regard to marketing, methods are changing very slowly so far as packages are concerned. There is perhaps a very slight increase in the quantity of apples shipped in boxes, but for the most part the barrel holds on, as it has proved a very satisfactory package for the English market, where almost all of our Nova Scotia fruit goes. Barrels are manufactured especially for the apple trade here and the flat-hooped barrel is gaining slightly, as being a better appearing package. The price of barrels is steadily advancing year by year. Good flat-hoop barrels now cost 25 cents and the round hoops 28 cents.

We are working for a Dominion law which shall fix the size of the barrel

absolutely, so that it will be a unit of measure. The present law fixes 96 imperial quarts as the minimum, but allows them to be as much larger as is desired, with the result that the Ontario barrel is 112 quarts, while in Nova Scotia it is 96 quarts. In Ontario, barrels are made chiefly for flour and apples, and as the flour barrel is fixed at 112 quarts the apple barrel has been increased to that amount, so that stock which is not quite good enough for flour barrels may be used for apple barrels. It doesn't so much matter what the actual size of barrels is, so long as they are uniform in size throughout the Dominion.

But while packages have changed but little, the care and "honesty" with which apples are packed have materially improved, owing largely to the influence of the Fruit Marks Act. This has been brought about partly, no doubt, through fear of detection among the few who intentionally packed the fruit fraudulently, but principally through the educational effect of the law. This educational influence has been exerted partly by the inspectors and others who have given "demonstrations" of the proper way to pack a barrel of apples; and partly by arousing a general interest in the subject of packing which has led growers to give it more attention on their own account.

There is practically no cold storage practiced in the Province. A few growers have small compartments in their packing houses where a few hundred baskets of plums or pears may be held in cold storage, but for the most part frost-proof warehouses are found sufficient as they are cool even during warm days.

In orchard management there has been a gradual increase in the percentage of orchards which are thoroughly cultivated, until now that is by far the most general method. Clean culture is practiced up to about July 1st, when some cover crop is sown. The most popular plants for this purpose are crimson clover, mammoth and clover, buckwheat and vetches. But alfalfa in some cases has proved very satisfactory indeed.

So far as is known we are still free from the San José scale. This is certainly remarkable, since in spite of laws requiring all nursery stock entering Canada, as well as all grown in Ontario, to be fumigated, a good deal certainly gets in without that formality. Our most serious pests continue to be the codling moth, bud moth, canker worm, tent caterpillar, and oyster-shell bark louse, among insects; and apple scab and black knot among fungous pests; and in spite of spraying, this combination every year does an immense amount of damage. During the past two years power sprayers have been introduced with, on the whole, satisfactory results, and we are hoping that their advent may lead to more general and better spraying of orchards.

F. C. SEARS.

#### MAINE.—POMOLOGICAL DISTRICT 1 AND 2

D. H. Knowlton, Chairman.

While there has been a steady growth in fruit growing in Maine, the farmers of the State are altogether too conservative to let go other interests to make rapid progress. In culture and care there has been much progress the past two years. More orchards are under cultivation in all parts of the State and the trees are responding to the care. For some reason, or a combination of reasons the Baldwin trees show signs of weakness—half-dead and dead limbs and in many cases entire trees in all parts of the State. It is very doubtful if the planting will any more than make this loss good. The industry

has become one of the most important and our people are beginning to realize how much it represents.

Although some have placed the figures higher there is no doubt the crop of 1904, was fully a million barrels of marketable apples. More than 500,000 barrels were sold at varying prices, the receipts from those exported ranging from less than \$1.00 to \$2.50. The supply was so abundant and the prospect of profit to the buyer so small, that in many cases the fruit had to seek the buyer, and places remote from shipping points had much fruit left over for stock or other purposes.

#### MARKETING.

Much discussion has been given this very important subject. The foreign buyers who visited the State the past year requested the farmers to send only the best fruit, but they took whatever was sent and returned, we presume, as much as was possible. In one case a few barrels of Kings carefully packed were sent to a Liverpool house, and the returns were only a dollar and forty cents per barrel. In another case about the same time a lot of inferior fruit went forward and the net returns were nearly two dollars per barrel. The result of this state of affairs, to say the least, is not a little embarrassing for there are some who say it does not pay to be too particular in sorting. The lessons taught us by Canadian fruit the past two years, satisfy us that quality wins in the end. The influence of the Fruit Marks Act is so apparent as to make certain that when the fruit marks are correctly made they are of great value in the market, and will take precedence in price.

Fruit growers in this State have been discussing the matter, hoping there might be some way in which the fruit marks of Maine apples might serve the same end as the Canadian fruit marks. Some have proposed a State law similar to the Canadian, while others seeing the difficulty of enforcing such a law hesitate and say the law should be national in order to secure similar results. There is no doubt a national Fruit Marks law would help not only Maine fruit growers but the fruit growers of every other State as well. Let us unite in asking Congress to give us such a law.

#### BETTER STORAGE NEEDED.

Maine fruit growers need better storage facilities. As it now is there are many who cannot, save in barns or other outbuildings, store the fruit they grow. The fruit often suffers from this kind of storage, and, worse than all, it necessitates the sale of the fruit before the cold weather sets in. The situation is fully recognized by the growers, but no plan as yet for a general storage system has been received with any favor. A storage system here need not be a very complex affair, for properly constructed houses would carry the fruit, if cooled down at the outset, without the aid of ice or a chemical outfit. English buyers have erected numerous storage houses in Nova Scotia, but as yet decline to do it in Maine. As the market situation now stands this is one of the great needs. As an investment storage houses in Maine would pay good dividends.

#### VARIETIES.

The condition of the Baldwin trees at the present time suggests the desirability of hardier varieties. The Baldwin is the leading variety in the State, but many growers have found other varieties quite as profitable. The Spy, R. I. Greening, Golden and Roxbury Russets and Harvey are found quite as profitable, and there are some who find the Wealthy a most desirable fruit

to grow. As we come more closely in touch with the markets, we are learning that there is profit in the earlier varieties, but greater skill is required in handling and marketing.

#### INSECTS.

I am glad to report the absence of the San José scale and the gypsy moth. The browntail moth has made its appearance in several of the border towns, as well as in towns along the coast. The State is putting up a good fight against the pests and it is hoped will keep them under control. As yet they have caused no serious injury to our fruit trees. For the first time under the law passed by the last legislature the nurseries and commercial greenhouses in the State have been inspected by the State entomologists, who report the hearty co-operation of the proprietors, and we may rejoice in the absence of more or less pests that are causing so much loss in other States, and threatening the introduction of injurious insects and contagious plant diseases.

In closing we will add that there is a growing interest in commercial orcharding in Maine. While the growth of trees in the State is less rapid than in warmer climates, the trees have greater vitality and will bear fruit longer. Our nearness to the foreign markets where surplus fruit finds an outlet, and our accessibility to the great markets of the East make the Maine situation favorable for commercial orcharding. To this it may be added that desirable orchard land may be had at exceedingly low prices.

### NEW HAMPSHIRE.—POMOLOGICAL DISTRICTS 1 AND 3

F. W. RANE, CHAIRMAN.

*General.*—Here and there throughout the State is occurring a renewal of interest in fruit growing. One man set about ten thousand apple trees near Plymouth the past spring, and similar attempts elsewhere although not on so large a scale are being made. The ideal climate of this State is bringing more and more people here during the summer and a number of these are getting interested in having permanent country estates. Many of these people find that fruits grow here readily and hence they become interested in fruit growing. Throughout the southern half of the State fruits generally do very well and hardier varieties are receiving attention by our farmers further north.

*Peaches.*—In a few sections this fruit is being grown successfully. The towns of Wilton, Hollis and Barrington are best known for their success with peaches. The first two named towns are in Hillsboro county and the latter in Strafford. Mr. G. W. Parker of Wilton sold eleven hundred half bushel baskets from one block of trees on one acre and a quarter. This was last season and he writes that his trees are well loaded with fruit again this year. It is claimed that whenever the thermometer drops to 14° below zero in winter it destroys the buds. The higher elevations are the better in this respect. The temperature reached 12° below zero a year ago last winter when the large crop at Wilton was produced.

*Plums.*—This fruit is grown very commonly throughout the State. Americanas are recommended in the north while both domesticas and Japanese varieties do equally well in the southern portion. Burbank and Abundance with Wickson are popular. The Lombard is probably more commonly grown than all others. Sixty varieties were fruited at the Experiment Station last year.

*Apples.*—Baldwins are the apples most largely grown. Of late, however,

there seems to be a tendency to set more late fall fruit like McIntosh Red and others of high quality. One of the best towns in the State for commercial apple growing is that of Greenland, Rockingham county. It is claimed that they sell forty thousand barrels here in a good season.

*Grapes and Small Fruits.*—There is a comparatively light industry in growing these fruits. Prices range high and there is little trouble in selling all that is raised in local markets. Currants bring eight to twelve cents, red raspberries fifteen to twenty cents and blackcaps about the same prices. Wild raspberries are bringing not less than twelve and one-half cents in quantities this year.

Grapes are largely imported. Those grown locally find a ready sale. With some little care in getting the young plants well established, after the first three years of growth the hardier and earlier varieties do well in New Hampshire. If well cared for, the Concord can usually be made to ripen, while those varieties earlier than the Concord can usually be depended upon.

*Orchard Management.*—Generally speaking our fruit trees are very indifferently cared for; while at the same time commercial fruit growing is a very important factor. Our most successful growers practice tillage, but some of them are experimenting with the mulch system of culture and feel very much encouraged from the results thus far.

*Enemies.*—Depredations, both insects and diseases, are as prevalent as ever, but are being better understood. The browntail moth is the latest to arrive and promises to require even greater persistency in careful fruit growing. Each new insect like the last brings new recruits to attempt spraying and a better knowledge of the business in order to succeed.

## RHODE ISLAND—POMOLOGICAL DISTRICT 2

Fred W. Card, Chairman, Assisted by A. E. Stene, John M. Eldredge, L. G. K. Clarner and Dr. H. W. Heaton.

Little change in the status of pomological industries can be reported since the last publication of the Society. Fruit growing in the northern part of the State is apparently somewhat on the increase, while in the southern portion it is largely stationary or on the decline, though here and there a newly planted orchard stands as an exception. The higher northern and western portions of the state seem best adapted to many of our fruits. The outlook in Newport county, on the island of Rhode Island, is reported to be excellent for peaches and apples; both these fruits do well in this locality. Japan plums are also planted to some extent. One man in this county is said to be growing figs on a commercial scale. Strawberries are largely grown, but raspberries and blackberries occupy a minor position throughout the State. Fruit growing under glass is confined almost wholly to that carried on in greenhouses owned by people of wealth, the product being grown for the family table. As a commercial undertaking very little of this class of work is being done.

No particular change in methods of marketing is to be noticed though there is a tendency to place more apples and sometimes pears in cold storage. Transportation problems are not important, since the markets are so close at hand.

Varieties which do not demand a long season are most satisfactory in this region. Apples of the Ben Davis type, which reach their highest development in warm climates do not succeed well here. The tendency in commercial planting is toward varieties of fair quality rather than those of exceptional excel-

lence. Amateur varieties are largely grown in the home gardens and private estates in our cities and villages. Growers are inclined to feel that the extra care that is demanded in the production of high class varieties is not likely to be repaid by the increase in price which such varieties will bring. On the other hand fruit of the poorest quality will not be accepted as formerly.

Allowing the orchard to remain in sod is still prevalent, although the more progressive growers are adopting a system of thorough tillage. Hard-wood ashes and ground bone are probably the most commonly used fertilizers. Cover crops are not always used in tilled orchards. Apple scab and brown rot are two of the most prevalent diseases. Bitter rot is very common on certain varieties. Peach scab is also troublesome. Brown rot is a menace to plum growing in many parts of the state though less troublesome to peaches.

The San José scale is widely scattered throughout the State. The legislature now demands inspection of nurseries and permits the entrance of nursery stock only on certificate of inspection or fumigation. One problem connected with the inspection laws arises through the danger which comes from the purchase of cheap stock to be sold by tree venders or department stores. Such stock may sometimes pass a nursery inspector even though it is of such a character that the nurseryman would not wish to place it in his regular trade. Another difficulty arises from the fact that there is no provision for compelling owners of land which lie adjacent to nurseries to keep their trees free from infection. This in some cases proves a serious menace to the nurseryman.

The advent of the San José scale has undoubtedly discouraged some people from planting trees. This is particularly true of the amateur grower who wishes a few trees in his home grounds. The more progressive commercial growers feel confident of their ability to control this pest. Thus far the lime, sulphur and salt treatment has seemed to give the most general satisfaction, though one member of the committee reports much better results from the use of limoid and kerosene.

## CONNECTICUT—POMOLOGICAL DISTRICT 2.

NORMAN S. PLATT, CHAIRMAN.

Our home and nearby markets consume so many berries and are such lovers of them that this branch of the fruit industry grows steadily larger.

The number of peach orchards in the southern part of the State has diminished somewhat, but in the central part on the extensive hills large orchards have been set in the last two years.

Losses were experienced in the severe winter of 1903 and 1904 which is something unusual for us, and is not expected to happen again. Some of our largest growers who formerly gave their peach orchards perfectly clean culture the whole season are now relaxing in that respect and are making trial plantings on rough side hills that seemingly can never be cultivated except by hand. The prospects this season are for practically a full crop of peaches.

Apples promise nearly a full crop. All peach and plum orchards have needed and I believe have had spraying for the San José scale. Some apple orchards have been sprayed for scale, but most have not. It is such a task we will avoid it if possible, but probably will have to do it.

We need to standardize the fruit we sell, particularly apples. We have no means of doing it at present, but we hope soon we shall have. Peach leaf curl disappears with the use of lime and sulphur spray.



## NEW YORK—POMOLOGICAL DISTRICTS 1, 2 AND 3.

Willis T. Mann, Chairman, Assisted by Edward Van Alstyne, Irving A. Wilcox, and Thomas B. Wilson.

The pomological interests of our State have not greatly changed since our last report. There is, perhaps, a little less of enthusiastic optimism and a little more conservatism though there is probably no less of real confidence in the inherent strength of our position as regards our location with reference to markets and the favorable character of our soil and climate for fruit production. The present sentiment which we may perhaps call one of hesitancy, is due to a succession of unfavorable seasons which have made it almost impossible to produce fruits of that high quality that satisfies the desires of the true Pomologist. The labor problem, too, is becoming very acute and our fruit growers are finding great difficulty in securing sufficient help to conduct the various operations of the orchard or to harvest the product in a satisfactory manner.

While these are serious difficulties that have tempered the ardor of the fruit growers yet in the fruit sections plantings continue and land values seem to be still increasing. There is, however, a growing sentiment that apples are not being planted in our State in proportion to the increase of population, or to the decline and loss of older orchards. The supremacy in New York State, today, in apple production rests on orchards of thirty to forty or more years of age, and if we maintain our standing we must greatly increase our plantings of apples in the immediate future in order that the loss and depreciation in the productive capacity of our older orchards may be provided for. It is becoming more and more apparent that the tree of great size is not a desideratum in the apple orchard but that we must produce trees of lower tops in order that production, and the harvesting of the crop may be cheapened and the quality improved. In the planting of young orchards this is one of the factors that is being taken into account. There is not yet, however, sufficient care in the thinning of orchards so as to maintain a broad, rounded top with the lower branches in full fruiting vigor. In too many of our older orchards the trees are crowded and the lower branches are dead or dying.

Little or no progress has been made in improving the methods of grading or packing. The very high price of barrels has caused much discussion in regard to the use of the box for apples, but its use has not been attended with particularly favorable results, and the barrel still retains popular favor for the wholesale market and there seems to be no immediate prospect of its being displaced as the popular package.

The continuance of the present unsatisfactory conditions is no doubt due to a variety of causes, among which are the natural conservatism of farmers; the great scarcity of help which makes it very difficult to handle the crop in a satisfactory manner, and prevents the adoption of any method that requires an increase of labor in handling; the nearness of many great cities which makes it possible to dispose of immense quantities of relatively inferior qualities of fruits which could not be profitably handled if extensive transportation intervened between the orchard and the market; the great variety of soils and local environments which make it possible to raise a great variety of products, and to the great diversity of interest arising from this condition, and from the further fact that special interests have been very highly developed in favored sections

as is seen in the Chautauqua grape district in which the grape interest, already enormous is still increasing at the expense of the apple and other orchard fruits, vigorous young orchards still being removed to make room for the grape; the Ontario fruit belt, extending from the Niagara River eastward along the south shore of Lake Ontario, in which the already great acreage of apple and other orchard fruits is being continually increased, and cold storage houses are being multiplied on every hand; the berry and evaporator interests of Wayne; the strawberry interests of Oswego, and the lower Hudson; the grape and plum and apricot interests of the central lake region; and the peach interests of favored sections of the Ontario fruit belt, and the Hudson. Each of these sections with its diversified interests has its own peculiar methods and problems in marketing.

In the Chautauqua grape district the concentration of interest upon one product makes associated effort of growers in the marketing of that product practical and even necessary. Not only are the growers confining their attention largely to one fruit, but it is estimated that 90% of the plantings are of one variety, the Concord. The other leading varieties are Niagara, Worden and Moore's Early. The 20lb. Climax basket is increasing in favor for wholesale handling, and increasingly large quantities of the fruit are being used for unfermented wine.

In the Ontario fruit belt where there is a great variety of product, the smaller orchard fruits are disposed of in large quantities to local canning factories and by personal shipment of growers to the local markets, but large quantities are also purchased by local dealers who ship to the more distant markets in refrigerator cars. Apple storage houses have greatly increased in number and now the greater part of the product of our apple orchards is purchased by dealers who hold the fruit in store for favorable market conditions. Large quantities of the inferior grades are used for evaporating but entirely too much of this inferior fruit finds its way to market with the better grades to the serious detriment of the reputation of New York State fruit.

The evaporating fruit industry has required the protection of legislation to prevent the improper curing and marketing of the product.

In the Hudson river section the nearness to the great city of New York and the favorable facilities for shipment to the foreign markets give rise to questions peculiar to these conditions. Not only is this section characterized by its own peculiar problems in marketing, but it also has its distinguishing characteristics in production as compared with the more western portions of the State. It is here that the Spy and Jonathan, the Esopus Spitzenberg and Newtown Pippin, with proper care, reach their ideal development. Though even here they are not considered profitable commercial sorts for the general market.

Throughout the State the Baldwin stands at the head as the most profitable apple. The Rhode Island Greening which has long been one of our most popular sorts is meeting with disfavor in the markets because of its liability to "scald" in storage. The Alexander is reported to be increasing in popular favor. The tendency seems to be towards the planting of fall varieties and others of known commercial value.

In the care of our orchards a series of unfavorable seasons due to excessive moisture has made clean tillage difficult and the high price of labor has also operated to discourage thorough treatment in tillage or in spraying. While the excess of moisture has perhaps reduced the necessity of tillage, it has greatly increased the need of spraying. Among the larger growers the use of power spraying machinery has greatly increased and the necessity of treatment is

recognized as of prime importance, but among those growers whose fruit interests are of relatively minor importance this operation is too often neglected.

Excessive moisture during the past two or three years has caused an exceptional development of apple scab throughout western New York; even well sprayed orchards often showing a large amount of the disease. Thorough spraying has also usually been characterized by burned fruit and foliage which has been attributed to the peculiar climatic conditions. In the Hudson district repeated attacks of the pear tree psylla and aphids followed by the very severe winter of 1903-'04 destroyed thousands of pear trees and so weakened many more that they will die. As a result growers are thoroughly discouraged and but few trees are being planted.

The San José scale while generally distributed over the State is causing much less discussion and anxiety than formerly, throughout western New York, and has not apparently discouraged the planting of orchards, except along the Hudson where it has secured a firm foothold and it has begun to effect production and has checked planting. It is recognized, however, as a very serious problem when it gains a foothold in our older commercial apple orchards because of the difficulty of thoroughly treating trees of great size, and it is generally believed that when such trees become badly infested that they will have to be removed, and that the future of apple production in this State must depend on younger orchards and lower trees.

## ONTARIO—POMOLOGICAL DISTRICT 2.

LINUS WOOLVERTON, CHAIRMAN.

Fruit growers in Ontario are dissatisfied with present methods of sale. Fruit is shipped on commission to small places as well as large, and retailers no longer buy with confidence expecting that any train may bring a carload to be sacrificed to their own prices.

Co-operative Packing Companies and f. o. b. sales are the chief topics of discussion, and we hope some improved methods may result.

The season's crop promises below the average, as a whole, and we hope for proportionate prices.

*Strawberries* have been exceptionally large and fine. Some of the leading varieties are Clyde, Williams, Lovett, Bismarck, Tennessee, Saunders, Haverland, Splendid, Jacanda, Van Demar, Warfield, Wesley, Satisfaction.

Cherries are a fair crop, Montmorency and Morello especially; but the early sweet cherries are poor and chiefly food for birds and boys. Sweet cherries are grown in the Niagara Peninsula, especially Gov. Wood, Knight, Tartarian, Elton, Napoleon, Elkhorn, etc.; while Duke, Kentish, and Morello are widely cultivated.

*Peaches* have been doing splendidly in the Niagara district, but in Essex the trees have been all cut down to the ground on account of severe winters with lack of winter protection.

*Raspberries* and *blackberries* are much grown. Of the latter chiefly Kittalinny, Snyder, Tyler, El Dorado, Agawam, etc. Of raspberries, the new one, the Herbert, introduced at Ottawa, is a wonder; very desirable.

## OHIO—POMOLOGICAL DISTRICTS 2 AND 4.

W. J. GREEN, CHAIRMAN.

Fruit growing in Ohio has undergone no considerable changes in recent years. There have been some gradual and minor changes in practice in several districts but the industry remains much the same. Peach, cherry and grape culture have undergone greater changes than other branches of fruit growing. Along the southern shore of Lake Erie in Ottawa county grape vineyards have been mostly replaced by peach orchards and there has been considerable extension of the latter within the last five years. In Athens and Muskingum counties peach culture has declined within the same period partly because of the prevalence of the yellows and also because of the local conditions which are unfavorable to the industry. The yellows has not gained a foothold in the Ottawa county district. This section also enjoys better market facilities than any other part of the state. Much of the fruit is sold on the co-operative plan and buyers also come in freely. Cherry culture has advanced in one region about Clyde in recent years. There are now several hundred acres devoted to this fruit in that section, one orchard occupying eighty acres. There has been considerable interest manifested in apple culture within recent years and the acreage of commercial orchards has probably increased, but there has also been a decline in old orchards, mostly because of the prevalence of the canker worm.

Pear culture has declined except in the case of one variety, the Kieffer. In plum culture there has not been much change. Less grapes are grown than formerly and yet the acreage remains quite large along the southern shore of Lake Erie.

Small fruits for distant markets are grown less than formerly and more attention is given to the supplying of the demand of our own cities and towns. But little fruit except peaches, cherries and grapes is exported from the state because of the excellent home markets. Less fruit than formerly is grown by farmers and the industry is passing into the hands of commercial growers. The influence of the farmers' orchard is still felt in small markets but in the larger cities its effect is hardly appreciable. In the larger cities there is keen competition due to the shipping in of fruit from other sections. Much of the early fruit which is shipped in is out of the way before our own is ready and our cold storage houses carry more apples from other states than from our own. It is a notable feature that while many of the cold storage apples are inferior in quality yet they appear to sell readily to the dealers, especially when nothing else is offered. These same dealers discriminate against Ben Davis and that class when offered by our own growers. It is becoming increasingly difficult to sell apples of inferior quality in our own market, and we have more inquiry from planters than formerly for varieties of high quality. Orchardists are giving this matter considerable thought, but the actual planting of varieties of high quality has hardly been begun. There is a tendency to compromise by planting good commercial varieties of fair or moderate quality, excluding those of very poor quality and those which, although of high quality, do not bear well.

There is almost no fruit exported from the state to foreign markets. Some growers have cold storage plants of their own while others patronize the large cold storage concerns in the cities; but the bulk of our apples are still stored in cellars and disposed of in nearby market early in the season.

There is nothing done in the way of irrigation in orchards. There are peach and plum orchards so situated that irrigation might be practiced and there are seasons when it undoubtedly would be advantageous, but thus far tillage has been depended on to take the place of irrigation. Many of our orchardists, especially peach, plum and cherry growers, believe in tillage and cover crops yet in practice, but few are growing cover crops, nor are there many giving thorough tillage. In consequence many of the orchards where tillage is begun early in the season are neglected and weeds allowed to take possession of the soil the latter part of the season. Where tillage is kept up during the entire season without cover crops the soil is beginning to show indications of a lack of vegetable fiber. In many orchards which have been cultivated in previous years, the owners are allowing white clover to take possession of the soil, and it is a notable fact in some cherry orchards which have been observed the result is not unsatisfactory. There are some growers who believe that they are getting better results with white clover in the orchard than by such tillage as they have been giving. No instances have been found where the white clover seems to be doing harm. Owing to the scarcity of labor it is probable that less tillage will be done in the future than in the past, nor is it likely that cover crops will be grown more than they have been. A considerable number of apple orchardists are growing their orchards in sod, mulching the trees with grass that is cut on the ground, also bringing in more or less straw and other material to mulch about the trees. So satisfactory has this method proved in the past that quite a number are beginning to adopt it—some through necessity because of scarcity of labor, others because of the difficulty of keeping the hillsides from washing when the land is cultivated and others who believe that the plan is best in all cases. Thus far no one appears to have found any objection to the plan. All who have tried it are enthusiastic and believe that it solves the problem of orchards on hilly lands particularly. The difficulty encountered is in procuring sufficient straw where the ground is not rich enough to grow grass. It has been found, however, by the Experiment Station through an experiment conducted by one of the largest orchardists in the state, that it is profitable to apply straw to an apple orchard at a cost of eight dollars per ton for the straw. Under this method of treatment the soil is constantly getting richer, washing is prevented, the crops are surer, the apples are larger and of a higher marketable quality. The method has also been tried on other kinds of fruit trees and has been found particularly advantageous on peach trees to prevent winter-killing. In the winter 1893-'94 deep freezing of the soil was disastrous to many peach orchards through the Ottawa district. The ground was not covered with snow and in consequence froze very deeply. But few orchards had cover crops growing in them and nearly all had been given clean cultivation a part of the season and many years before. The soil had been depleted of vegetable fiber and froze much deeper in consequence.

Many of the trees have been injured by the San José scale and leaf curl, hence the vitality was rather low. Thousands of trees were killed outright and others severely injured, making the loss a very serious one. In some cases where trees were growing in grass, or had been mulched with straw or other material the injury was far less; in fact where the soil was covered with some kind of material so as to protect the roots of the trees there was no loss. This object lesson has convinced many of the growers that the trees must either be mulched or cover crops grown. The fact, however, that the soil has been cultivated so long without the growing of cover crops makes it difficult to grow

a sufficient crop to do any good in the way of mulching, especially in old orchards where the trees are large. It is probable that this costly lesson will have some influence in causing growers to abandon the method of cultivation without restoring anything to the soil. More than ever before will they grow cover crops or mulch their soil or do both.

The San José scale has done very serious damage in many localities and yet wideawake orchardists do not fear it in the least. It has been found that the treatment of peach trees for San José scale with the lime and sulphur mixture prevents the development of the peach leaf curl fungus and this alone is sufficient to pay for the treatment. Many peach orchards, however, have been destroyed or badly injured by this pest. Considerable experimenting has been done with different insecticides. Crude oil was found to be effective and in the hands of some was entirely satisfactory. Many others, however, did injury to their trees. Caustic soda has not given satisfactory results. The lime, salt and sulphur mixture has been in most cases entirely satisfactory and is now used to the exclusion of almost everything else. This mixture is also found valuable in apple orchards to prevent the apple scab. Those who are growing fruit in a commercial way have nothing to fear from the San José scale but in many small orchards where it is not deemed worth while to spray, the trees have been seriously injured and in many cases destroyed. The destruction of trees seems to continue almost unabated in this class of orchards.

The nursery inspection has been carried on several years with good results. It is also extended to the inspection of private orchards so far as means will permit. It is a notable fact, however, that nearly all of the infected trees, especially of the earlier plantings can be traced to the nurseries, showing that there has been a great deal of carelessness on the part of the nurserymen in the sending out of stock. At present nurserymen are undoubtedly more careful than formerly and most of the recently infected orchards can be traced to other sources. Fumigation is not compulsory except at the discretion of the inspector where it is found to be necessary. The advent of the San José scale does not seem to have discouraged the planting of commercial orchards to any great extent. Occasional orchardists are heard to remark that they do not care to plant trees when they must be sprayed for the scale, but those who give the matter most attention do not hesitate to plant any more than they did formerly.

The spraying of trees for the various orchard pests is not by any means general. Commercial orchardists and a few private growers practice it thoroughly, but aside from these the practice is not generally followed.

On the whole orcharding in Ohio is in a satisfactory condition. There is a feeling that it might be largely increased with profit, especially in the hilly portion of the state, but as yet there is no very strong movement towards planting out large commercial orchards. There is, however, an indication of a healthy growth in nearly all lines of fruit growing, especially for the home market.

### DELAWARE.—POMOLOGICAL DISTRICT 3

J. W. KILLEN, CHAIRMAN, ASSISTED BY O. A. NEWTON, J. E. CARTER, F. C. BANCROFT AND JAS. T. SHAWCROSS

Your committee herewith presents its report for Delaware. Mr. O. A. Newton's report on strawberries in Sussex county gives a very good showing for the strawberry in Delaware.

No doubt Bridgeville is the greatest strawberry market in the world at present. The peach interest in that part of the State is very highly developed, a few years ago New Castle county, near Middletown, was the great peach center; from there it moved to central Kent county, thence southward to Sussex county, Bridgeville being one of the principal points for heavy shipments of fine peaches at present. The crop is very short this year throughout Delaware. The crop passed through the winter safely, but was destroyed by the heavy spring frost and freeze—17-19 April; ice formed one-fourth of an inch thick on the morning of the 19th. Up to these dates we never had a finer prospect for peaches in our orchards here in Kent county. The same may be said of pears and cherries.

Early apples are more extensively shipped from Wyoming, central Kent, than from any other point in Delaware. They have been bringing remunerative prices this season. The acreage is increasing. The package preferred is a good strong hamper (one-third barrel). The winter apple industry has also been highly developed in central Kent; shipments to foreign markets have been successful.

Considerable of the fruit, especially apples and pears, go into cold storage.

Gandy strawberry has been the moneymaker the past season.

Red Astrachan, Yellow Transparent, Early Ripe, Early Cotton, Fourth of July, Strawberry, etc., are well adapted and do well as early apples. Nero, Missouri Pippin, Nicojack, Rome Beauty, Stayman, Paragon, Winesap, etc., all do well. Orchards and vineyards that produce the finest fruit are thoroughly sprayed. The Bordeaux mixture has given as good results as anything used. The dust spray is giving very good results to some of our commercial growers. Orchards from which our best fruit is procured receive thorough tillage early in the season, followed up by a cover crop of scarlet clover as a cover crop for winter. Cone peas are also used in our orchards quite extensively, with very beneficial results.

The San José scale has discouraged some fruit growers, but it has been demonstrated that it is not impossible to grow first-class fruit in orchards even after they have become very badly infested with the scale. Thoroughness must be the watchword when spraying to kill the scale, whether with the L. S. S. mixtures or the oils.

#### REPORT ON STRAWBERRIES.

By O. A. Newton.

Thirty years ago when a farmer here increased his strawberry patch to two acres he was criticised, and his neighbors predicted no outlet for such a large (?) acreage of strawberries. Note the difference to-day. Not one farm within a radius of ten miles of Bridgeville that is not growing strawberries, and on some farms as many as forty to fifty acres, and on many twenty to thirty acres. Bridgeville to-day stands undisputed as the greatest strawberry shipping point in the world. The aggregate shipment of strawberries from Bridgeville was three million and five hundred and twenty thousand quarts (3,520,000), nearly 500 carloads, and would have made at one shipment a train over three miles long. The gross sales amounted to over \$210,000, and netted the growers over \$140,000, or over four cents a quart average, not including picking and crates, which are deducted, leaving over four cents net. This is highly satisfactory, but there are cases where our farmers have netted six cents, and the Gandy variety has netted eight cents. The writer has had a highly profitable season on strawberries, and from one acre of the Gandy variety had

picked 6200 quarts of berries which netted him eight and one-eighth cents a quart, or \$503.62. Other large yields and highly satisfactory prices can be reported.

The banner day of the season for shipment was Monday, May 29th, when sixty (60) cars were loaded and shipped. Saturday, May 27th, was a close second with fifty-three cars. Each and every day for two weeks and over, thirty-five to fifty cars went out daily. Ninety per cent. of the berries were shipped in refrigerator cars, and went to Pennsylvania, New York, all parts of the New England States, Ohio, Michigan, and to various parts of Canada. And all the berries were sold to buyers at the station, not one per cent. of the crop being consigned by the grower. This system has been in vogue for several years and has been found satisfactory to both the buyer and the grower. At no other place in the country is the sale of fruit at the station so general as it is at Bridgeville.

The varieties most generally grown are Superior and Gandy. There was this year some Excelsior, Tennessee Prolific, and a few other varieties, but these are being discontinued for the Superior and Gandy varieties alone, which are adapted to our soil and grow handsomely here, firm, large, beautiful color, good yield and large green cap.

The prices paid at the station were from three to fifteen cents a quart with an average of over six cents.

But one style package is used here for strawberries—the forty-eight quart crate, and it has proved a very popular package.

The weather conditions for harvesting the crop was excellent; better weather could not have been desired.

The acreage for next year is even larger than it was this year, and with a good yield next year seventy-five cars of ripe, luscious strawberries will leave Bridgeville one day to delight the appetites of people of many parts of the United States and Canada.

### DISTRICT OF COLUMBIA.—POMOLOGICAL DISTRICT 3

W. N. IRWIN, CHAIRMAN

I regret that conditions have not improved since my report of two years ago.

The rapid spread of the San José scale, with scarcely an effort to combat its ravages, has done great damage to orchard trees and fruit.

Small fruits are grown in considerable quantity and when marketed in perfect condition command remunerative prices.

Our soil and climate are well adapted to the production of most of the small fruits, and if irrigation were practiced, the industry would be a most profitable one.

Washington, our capital city, with its suburban towns, government reservations, parks, cemeteries, etc., occupies a large portion of the District of Columbia.

Probably a thousand-fold more fruit is consumed than is produced in the District.

No change noticed in methods of marketing.

Some varieties that succeed well are:

*Apples:* Yellow Transparent, Red Astrachan, Early Harvest, Summer Rose, Early Edward, Mexico, Early Cooper, Shoemaker, Townsend, Summer Hagloe, Sour Bough, Benoni, Gideon, Bloomfield, Summer Rambo, Smokehouse, Wealthy, Grimes Golden, Wolf River, Fallawater, Oldenburg.



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PENN VALLEY, LOOKING NORTH FROM CLIFF, AT TWENTY-NINTH AND BROADWAY.

*Peaches:* Canada, Greensboro, Mt. Rose, Stump, Reeves, Favorite, Elberta, Fox Seedling, Salway.

*Pears:* Elizabeth *Mannings*, Bartlett, Seckel, Rossney, Louise *Bonne de Jersey*, Sheldon, Angouleme, Anjou.

*Plums:* Red June, Abundance, Milton, Stoddard, Damson.

*Cherries:* Dyehouse, Eearly Richmond, Montmorency Ordinaire, Carnation.

*Blackberries:* Early Harvest, Eldorado, Kittatinny, Snyder, Lawton.

*Raspberries:* Miller, Marlboro, Kansas, Gregg.

*Gooseberries:* Houghton, Smith, Triumph.

*Currants:* Fay, Cherry, Moore Ruby.

*Strawberries:* Thompson *Lady*, Crescent, Tennessee, Brandywine, Gandy,

*Grapes:* Campbell Early, Concord, Niagara, Delaware, Lindley.

The trend of the market here is for fruits of better quality, one commission merchant remarking "that he could not get enough Jonathan and Grimes Golden to supply the demand.

The Italian fruit venders when offered fruits of poor quality will shake their heads and say: "No goodie, no goodie."

Fruit in large quantities is held in cold storage here to supply our markets as needed.

#### VIRGINIA.—POMOLOGICAL DISTRICTS 3 AND 4

GEORGE E. MURRELL, CHAIRMAN

There is active development going on in Virginia in the planting of commercial orchards, both apple and peach. Several orchard companies have been organized during the present year and individuals are increasing their plantings. While a large portion of this development has been in Piedmont, The Valley and Appalachia are increasing their orchards and in the latter particularly there is an awakening to opportunities that have long lain dormant.

*Marketing.*—There have been no decided changes in marketing methods. There is a tendency toward trying smaller packages for apples, but the barrel is still the standard. Cold storage is having a marked effect upon the apple industry and as a number of fall varieties, such as Magnum Bonum and Sweet Winter Paradise, have shown storage qualities equal to the best winter varieties, increased plantings of such varieties will undoubtedly follow.

*Orchard Management.*—With the commercial orchards the tendency for more thorough cultivation is becoming more and more pronounced and the use of spray machinery more general with all classes.

*San José scale* has done more to impress the public with the necessity of spraying for insects and diseases in general than any one agency of recent years. In individual cases it has deterred planting, but on the whole the nurseries of the State report unusually heavy sales and the commercial orchardists have accepted it as one of the pests to be allowed for as a possible orchard expense. As the thorough treatment it requires is beneficial in controlling a number of other troubles, its advent is not without its offsetting advantages.

#### ARKANSAS.—POMOLOGICAL DISTRICTS 4 AND 7

W. G. VINCENHELLER, CHAIRMAN

*Apples.*—The crop of 1901 gave a great stimulus to planting. During the time since there has been a vast increase in the area occupied by apple trees. Planting is extending eastward along the St. Louis and North Arkansas Rail-

way and along the railway lines all over northwest Arkansas. The varieties planted are chiefly winter varieties. During the past year or two there has been an increased interest in early apples, like Yellow Transparent, Early Harvest, and Red June, which extends to regions not adapted to winter apples.

*Peaches.*—The peach industry is undergoing a vast extension. Many trees have been set in the northwestern counties, but the principal extension is in the peach belt as outlined in Bulletin No. 79 of the Arkansas Experiment Station. Large plantings are being made in Clay County on Crowley's Ridge and southwest along the southern boundary of the northwestern plateau to Van Buren and vicinity. Very extensive plantings are being made in the southwestern part of the State in Sevier County. Other considerable plantings have been made in central Arkansas and southward into Union County.

*Grapes.*—There is an increased interest in grape growing. In Saline County grapes receive considerable attention. A sixty acre vineyard, largely of Delawares, is found at Slatonville south of Ft. Smith, the property of M. S. Scott. C. A. Stark has some fifteen or twenty acres in vineyard at Silver Springs in Benton County. A number are taking up grape growing at various points in northwest Arkansas.

*Melons.*—Melon growing has for some years been extensively carried on. The Arkansas Netted Gem is scarcely excelled in quality by melons grown anywhere in the United States.

*Apricots and Nectarines.*—Apricots and nectarines, as well as the almond, are too early in flowering to offer much promise, though they may yet find localities in the State suited to them.

*Plums.*—Plums are as yet not a commercially important crop in Arkansas although there are some splendid young orchards in existence.

*Strawberries.* The strawberry industry is the important one in Arkansas, although less extensive at certain points than in the '90's; on the whole the area has increased. There are important interests at Judsonia, DeQueen, Van Buren, Fayetteville, Johnson, Springdale, Prairie Grove, and Siloam Springs, as well at a number of lesser points. Washington County alone shipped some three hundred carloads the past season. Quantities almost, if not quite, as large were sent out from some of the other centers. The area will likely be reduced next year. The past season was not a very satisfactory one for the growers, pickers at two cents a quart much of the time making nearly double the net profit of the grower. Transportation rates are felt to be too high. Growers need to reduce their areas and grow better quality.

*Fruits under Glass.*—This branch of fruit growing receives no attention in Arkansas.

*Marketing.*—The apple barrel is becoming so high in price as to seem like a luxury and one the fruit grower can scarcely afford. The bushel box is widening in popularity for the better grades of apples. Cold storage facilities have vastly increased. There are large plants at several points in the apple section with a combined capacity of some 150,000 barrels.

Growers and buyers as a rule give too little attention to careful grading and packing. This results in loss in storage, as well as in the marketing. Losses have been occasioned to grower from time to time, owing to inability of railroads to furnish cars just when needed. Freight rates are also excessive. The writer has paid as high as one dollar and a half a barrel to points in Texas over the Frisco Railway.

*Varieties.*—The most successful commercial winter varieties of apples are Jonathan, Grimes, Ben Davis, Coffelt, Winesap, Pennsylvania, Cider, Ingram,

Arkansas Black, and Shockley. Of summer varieties the leaders are Yellow Transparent, Red Astrachan, Red June, Early Harvest, Horse, Maiden Blush, and Golden Sweet.

Of peaches Elbertas constitute about ninety per cent. of plantings. There are some Family Favorite, Mountain Rose, Slappey, Mathews, Piquet, Salway, Thurber, General Lee, Chinese Cling, White Heath, Madison County, and Smock and Crawford Early, but only in small plantings.

*Interest in Better Quality.*—There is a desire and interest to plant varieties of quality. Ben Davis has been the money apple, however, and on the whole is the most reliable. A great mistake in the past has been to pick this apple all at one time. Growers are learning better, however, and are making two or three pickings. This has much to do with the quality of this grand old apple.

The King David apple is a new apple of Arkansas origin worthy of special mention. Its origin was near Durham, Madison County. It was named as above by Messrs. Stark, who are propagating it extensively. In general form it is about the size and shape of a medium Ben Davis, but with a brilliant red skin as smooth as silk with a quality equal to, or superior to Jonathan and excellent keeping qualities.

The variety christened "Orphan," originated near Fayetteville. It is a fall apple of excellent quality and very handsome appearance about the size of a Winesap, but slightly more oblong. It is white skinned with a brilliant carmine cheek and has a tenderness of flesh that makes it very delicious. It keeps easily to Christmas in cold storage. It is a very heavy bearer. It was named by Mr. T. E. Shelton of Fayetteville and is being disseminated by him.

*Orchard Management.*—Gradually the influence of the Experiment Station and other factors is being extended. Orchards are receiving better attention in the way of cultivation, pruning, and spraying. There is a noticeably increasing interest in the use of fertilizers for fruit trees.

*Inspection of Nursery Trees.*—Many trees were formerly sold in a deplorably diseased condition. Many trees had crown gall and others were set out affected badly by the results of wool aphid. This is all past now. Such trees are being thrown out by nurserymen and rejected by purchasers. This is a result directly traceable to the influence of the Experiment Station. For several years interested growers endeavored to have passed a nursery and orchard law. It failed to pass repeatedly. In 1903, however, a poor law was passed. It makes inspection optional with nurserymen. Hence only those who ship out of the State, when they come in contact with the inspection laws of other States, have their stock inspected. This leaves our own planters at the mercy of their own intelligence. Orchard inspection is not provided for. No appropriation is made for inspection work. The party having inspection done pays the expenses aside from the fee fixed by law.

San José scale has as yet not been a serious factor in Arkansas fruit growing. The entomologist of the Experiment Station has reported it at several points affecting peach and apple trees mainly, and oaks at one point. It has been found also on *Machura*, which is native and common. Our legislators need to wake up along this line of protecting our great orchard interests. The oyster shell bark louse is a very common pest and has much more of a start than San José scale. Some orchards of large extent are badly infested with it.

Root rot is likely to make less trouble in the future than in the past. Orchardists understand the conditions favoring it and are avoiding or correcting them.

On the whole Arkansas is making immense strides forward in all lines as well as horticulture. During the past five years the advancement has been phenomenal.

### MISSOURI.—POMOLOGICAL DISTRICTS 7 AND 8

J. C. WHITTEN, CHAIRMAN, ASSISTED BY L. A. GOODMAN, C. H. DUTCHER, J. C. EVANS,  
AND C. C. BELL

Horticultural progress in this State in recent years has been largely a general progress along the usual lines rather than any specially new departures. Possibly the greatest interest centers to-day along the line of cold storage and improvements in marketing and handling which have been an outgrowth of better developed methods of storage. A larger and larger number of our fruit growers are storing their highest grades of apples and securing a higher priced market for them in late winter or early spring. The Jonathan and Grimes Golden apples, for example, two of our most delicious sorts, have heretofore been considered fall apples and have been placed on the market very early, while the apple crop was so abundant that only moderate prices could be secured. At the present time, many growers are packing the choicest grades of these and other varieties of high quality, putting them in storage and holding them for the spring market when they can secure better prices. Many growers thus receive more money for that portion of their fruit which will rank as strictly first-class fruit, marketed late, than they formerly received for the entire crop sold on the tree, or put upon the market early in the season. This is also leading to the use of 40-pound bushel boxes, rather than the apple barrel, for strictly first-class fruit. Growers are able to secure for a 40-pound box of apples in the spring more than they could usually secure for a barrel of apples marketed in the fall. The 40-pound box is also being a more popular package for certain markets, particularly in the South and Southwest.

Inasmuch as storage through the winter is becoming an important factor in the handling of fruit, it has also lead to placing great attention not only upon the grading of fruit, but upon more careful methods of handling, so that the fruit will keep better in storage. It is also leading growers to make a study of the best stage of ripeness at which fruit should be picked for storage. A majority of the growers are finding that where first-class fruit can be gotten into cold storage very quickly after it is picked from the trees it may be allowed to take on a far better color than it would have been allowed to reach under former methods of handling. For this reason it reaches the consumer in a more perfect stage of development.

Marked progress is being made in securing new or heretofore untried varieties which are better suited to our central-western conditions. Perhaps two dozen new varieties of apples have been originated in the State of Missouri or in the Ozark region of Arkansas, which are beginning to take a prominent place in commercial plantings. A larger and larger number of our commercial plantings now consists of varieties of high quality, which will command a higher price on the market, especially if kept in storage until the bulk of the apple crop is consumed. Formerly growers planted almost wholly Ben Davis. At present they are not planting any fewer Ben Davis, but are planting very much more largely of the more desirable sorts in addition to the Ben Davis.

The growth in actual commercial orchard area, particularly of the apple, is an accelerated one. Larger orchards and more of them are being put out in the

last five years than have been before. The marked development in the organization of fruit shippers' associations is a prominent feature of recent years. This is particularly true in districts where berries and perishable fruits are being grown. From the influence of these association a more rational distribution of berries and perishable fruits planted by each man has been brought about. For instance, in the berry growing districts there are perhaps fewer excessively large fields grown by any one man, but there are a far larger number of moderate sized fields becoming more generally planted throughout these districts. The tendency is for each man to plant and handle only such an area as will enable him to give first-class attention to cultivation, picking, and marketing of the fruit, so that the fruit is averaging much better grade than formerly, when a man often had a bigger area than he could attend to. Through the organizations, much more attention is given to the proper grading of the berries and less bad fruit is put upon the market.

The utilization of the surplus product through canning, preserving, evaporation, etc., is receiving much more attention and this has resulted in less liability to glut the markets. The associations are, under their present organization, able to make a far more rational distribution of fruit, which again results in less liability of glutting any given market. The tendency is growing to sell fruit on track to buyers.

In recent years more attention is being given to purely business interests of handling and marketing the fruit rather than confining the interest solely to purely cultural methods. A large number of men of fine business training are engaging in extensive fruit culture individually and are forming definite organized companies for producing fruit on a large scale as a commercial investment. This has introduced in fruit growing circles a business element which is having a profound influence upon shaping better commercial results.

## OKLAHOMA.—POMOLOGICAL DISTRICTS 4 AND 10

H. H. CUMMINS, CHAIRMAN

The fruit interests of Oklahoma are rapidly developing and promise to be very important. The Territory is crossed by several large streams, along all of which there are thousands of acres of subirrigated lands, such as are giving remarkable results at Hutchison and other points in Kansas.

Trees planted on these lands reach permanent moisture and as we are blessed with abundant sunshine we have the natural facilities for the finest fruit, soil, sunshine, and moisture. Fruit rarely cracks or mildews under such conditions and it reaches the highest quality in color and flavor.

The "Jack Lands" are also adapted to horticulture and produce remarkable crops of fine fruit where thorough cultivation is given. The soil being very warm fruits and vegetables are five to fifteen days earlier than in other localities.

Do not know of any place where the industry is declining, though on some of the hard lands commercial orcharding has been abandoned for lack of moisture

As yet Oklahoma has produced little fruit for export, the home demand being very large. Owing to the fact that, as in all new countries, the towns grow much in excess of the rural districts and many farmers are slow to set orchards and very many are not horticulturists and after trees are set they are allowed to go to weeds and die, so that the careful man who plants and takes care of his orchards and vineyards is obtaining very satisfactory results.

*Transportation.*—This promises to be a very important question, as in all

new countries freight and express rates are most exorbitant, amounting almost to confiscation. The only rational remedy is government ownership.

*Packages.*—This is an important question and should receive careful consideration. The basket and box seem to be the favorite packages, and the smaller sizes have the preference.

*Storage.*—Little or no storage has as yet been provided, there not being sufficient fruit to justify the expense, but the time is fast approaching when it will force itself upon us.

*Varieties.*—We find that in a general way that early varieties give best results, as they mature before dry weather affects them. In favored locations and on subirrigated lands late varieties often prove most profitable as they come when the market is bare and the demand good.

Almost everything has been tried here as the people are from everywhere and everyone has his favorites.

*Strawberries.*—Aroma, Gandy, Warfield, and Senator Dunlap seem to lead.

*Raspberries.*—Gregg and Kansas.

*Blackberries.*—Early Harvest, Kittatinny, and Child Tree.

*Gooseberries.*—Houghton and Downing.

*Currants.*—Crandall.

*Cherries.*—Early Richmond and Montmorency.

*Plums.*—Burbank, Gold, America, Gonzales, Arkansas, Lombard, Wild Goose, German, Prime, and Lombard.

*Apricots.*—All kinds.

*Nectarines.*—Early Violet, Pitmaston, Ebruge, Hensatonny.

*Peaches.*—Almost any sort according to individual fancy.

*Pears.*—Keiffer largely in the lead followed by Duchess and Garber.

*Apples.*—*Summer:* Yellow, Transparent and Duchess. *Fall:* Missouri Pippin, Winesap, Jonathan, Ben Davis, Rome Beauty.

*New Varieties.*—The America plum, with us this year, easily takes first place. Though not quite so large as Burbank, it is still large and a fine specimen, measuring five inches in circumference; quality better than Burbank, and more productive than that justly famous sort. There are also some new blackberries that have not been introduced to the public which promise well.

*Grapes.*—The grape seems particularly adapted to this country and almost every variety seems to do well in any location and under any good system of cultivation or pruning. So far the Minson Post Oak hybrid seems to be a little the most productive, being great drouth resister.

Goethe does fine, but is a little too late for dry seasons. Thompson Seedless is enormously productive, but lacks a little in quality. So far with us Carman has been most profitable. The general trend of planting at present seems to be toward standard market sorts.

The general consensus of opinion is to clean shallow cultivation, though owing to our light soils and high winds it has put many of us to guessing.

Much attention is now manifested in the cow pea as a cover crop and all information regarding it is eagerly sought by our people. Irrigation is all right, but not accessible to many.

Orchards are all low headed and pruned only enough to keep trees in shape; some are practicing the California system of heading back; this seems to be especially necessary with the Keiffer pear, which grows very tall unless cut back.

The Acme harrow, disk, and sled cutters are largely used in orchards. No commercial fertilizers have as yet been used in this country.

The worst insect pest in Oklahoma is probably the curculio, which is



abundant in the native sand plum and sand cherry, and has now become a serious pest in orchards. Spraying seems to be quite effectual in controlling it. Gold plums sprayed were almost perfect and but few worms in Burbank and Wild Goose. The time has come in Oklahoma when it is absolutely necessary to spray. The tent caterpillar is also in the native fruits and needs our careful attention. All eggs should be picked off and destroyed before hatching time and the few that are left can be easily killed by burning out the nests.

The San José scale has been reported in some parts of the Territory, but as yet has caused little alarm. Inspection laws were passed last winter looking to its control.

Borers and rabbits are quite serious pests and no absolute remedies yet found, though cultivation for borers and screen wire for rabbits seem most effectual.

In conclusion it is fair to say that what we need most in Oklahoma is more fruit growers; men who understand the business. The natural resources are here; soil, sunshine, water, markets, etc. (land at \$5.00 per acre and up).

There are great apple orchards in Kansas, great peach orchards in Texas, and Oklahoma should furnish great vineyards, as we can probably furnish a greater variety of good grapes than any part of the United States, and have no competing market nearer than New York. Early varieties ripen here about July 5th to 20th, and with a judicious selection we can have them until frost, which often extends late into October; and with proper storage can have them all winter.

## GEORGIA.--POMOLOGICAL DISTRICTS 4 AND 5

G. H. MILLER, CHAIRMAN

*Fruit Industries.*—Fruit growing, especially peach growing is developing steadily in nearly every section of our State, especially in the middle and northern parts of the State. The extreme southern part of our State is not well suited for peaches. There are a few localities in which interest in peach growing is rather on the decline, owing to the crown gall, brown rot, and San José scale. Plum growing is receiving increased attention in middle Georgia. Apples are grown commercially in the northern part of the State only. The grape interest is on the decline to some extent. In south Georgia the cultivation of Oriental pears is being revived as the LeConte seems to be blighting less and bearing more than previously, this year's crop being heavy. In some parts of the State, especially in southwest Georgia a great deal of interest is shown in pecan growing and many orchards are being planted. But little attention is given to fruit growing under glass.

*Marketing.*—We do not know that there is any particular change in the methods of marketing. Some locations preferring to sell on the track here at home, rather than to consign their fruit. We do not know that there has been any shipments this year to foreign markets. Commercial growers have become convinced that good, honest packing is essential to success in marketing. Cold storage is not now practiced in the bounds of this State unless in a small way for apples and pears.

*Varieties.*—The catalogue of our Georgia State Horticulture Society gives the latest report on varieties and adaptation to the different districts of our State. Commercial peach growers are planting largely of Elberta, Carmen, Belle of Georgia, Hiley, Red River, and a few other varieties. The question as to what varieties reach the highest excellence in the various fruit regions in our State,

is a difficult one to answer in the bounds of a report of this kind. The trend of planting is toward commercial varieties that are good yielders and that carry well to market. The varieties of the apple in the catalogue of 1901 that we would drop from the list for the State of Georgia are: Cross, Dominic, Red Pen-nock, English Russet, Fallawater, Hagloe, Hubbardston, Red Canada, Yellow Newtown; and would add one star for Kinnard, making it two stars. Of peaches we would drop one star from Alexander, Crosby, Early Crawford, Late Crawford, Louise, Old Mixon Cling, Old Mixon Free, Royal George, Smock, and Beer's Smock. There are some new varieties that are being tested in this State, but we think it is too soon yet to report on them.

*Orchard Management.*—The best management for orchards is to give the trees good tillage all through the early part of the season up until August. Cover crops grown in orchards to protect the land from washing during the winter, is being practiced with good results. Trees are trained with low heads. Fertilizers are being used by our best growers. When the trees come into bearing they aim to use a fertilizer with a large percentage of potash. Nothing new to report in frost protection, nor improvement in management.

*Insects and Diseases.*—The commercial growers have learned how to keep the San José scale in check and they do not dread it. There is a serious menace of crown gall in different sections in our State. This year there is quite an amount of rot in peaches.

The above may have discouraged the planting of orchards in some sections, but it has not materially affected fruit production as our best orchardists know how to treat it. The peach and plum have suffered more than any other class of fruit from its ravages. The treatment in commercial orchards is usually the lime-sulphur wash, or the lime-sulphur-salt wash.

## FLORIDA.—POMOLOGICAL DISTRICT 6

H. HAROLD HUME, CHAIRMAN, ASSISTED BY P. H. ROLFS, F. C. REIMER, AND  
AUBREY FRINK

*Fruit Industries.*—The general status of the fruit industry for Florida and the southeastern United States generally is one of active development. Minor regions are less progressive than the general southeast, but as a whole, pomolog-ical interests are greater than ever heretofore. Peach growing, citrus growing, and small fruit growing are everywhere receiving more attention than ever heretofore. The most rapid development is taking place in the extreme south-ern portion of Florida. This is brought about by the railways opened in this section, by the drainage of the everglades, and also in no small measure by the invention and perfection of the gasoline launch. At first thought this might seem to be a trifling and far-fetched agent in promoting fruit growing. In the slow running rivers, or what might be termed estuaries, which are for the most part land-locked in extreme southern Florida, these small crafts play a very important part in delivering fruits and vegetables to the railway stations. They are especially useful from the fact that every fruit grower can possess one of them, and they are able to traverse waters that are entirely too shallow for a regular steamboat.

The northern and western portion of Florida is probably receiving less attention in the way of fruit growing than it did a decade ago, comparatively speaking. This country is being developed somewhat as a general farming

country, and as a whole is not as well located climatically as other places nearer the markets.

Fruit growing under glass may be said to be practically unknown in Florida.

*Marketing.*—No radical changes have taken place in the methods of marketing. A somewhat greater uniformity in the method of packing, better packing, and some efforts at combining into associations have occurred, but these have made no notable or strong impressions.

No considerable quantity of fruit is sent to foreign markets, excepting in the case of early ripening pineapples. These are reaching the European markets by way of New York. The trial shipments that have been made for a number of years show rather conclusively that in the course of time even these markets may become of considerable importance for sending the better grades of this fruit.

Considerable trouble was experienced during last fall in citrus fruit rotting in transit. A number of causes combine to produce this effect. The late rains occurring at an unusual season produced fruit that was not able to stand up as well as in other years. This, together with the fact that in certain cases the fruit received improper attention en route, occasioned some severe losses.

*Varieties.*—Along the east coast of Florida the Red Spanish pineapple has practically supplanted all other varieties. In the citrous fruits no new varieties of special merit have made their appearance within the last two years.

In the case of the citrous fruits, which include essentially the orange and pomelo, the trend of planting is toward the higher classes. In the orange section the variety known as Pineapple is being very largely planted for early fruit. Special strains of Satsuma orange and Parson Brown are making their appearance, and these are being grown in preference to strains of this variety that are of not so great excellence.

The trend of planting in the case of pineapples is exactly in the opposite direction—that toward planting commercial varieties. As mentioned above, the Red Spanish is pre-eminently *the* pineapple. This must be accounted for by the fact that, to most people outside of the pineapple growing region, one pineapple is almost the same as any other, and very few people have an opportunity of eating a really good fruit. A reaction must necessarily set in before very long. Another reason for the preference for Red Spanish is the fact that it is very much hardier and more easily grown than the finer varieties.

The Department of Agriculture is preparing for the reaction which must set in on the pineapple market by hybridizing for greater vitality and more luscious fruit, also by introducing varieties from abroad.

No systematic effort is being made at keeping the tropical fruits in cold storage as it has seemed more desirable to have this work done near the centers of consumption.

*Orchard Management.*—Irrigation in citrus orchards is being practiced in some orchards of considerable extent. As a general rule a sufficient amount of moisture falls during the growing season to permit proper maturing of the fruit. Occasional years, however, a drouth during the summer is severe enough to cause considerable loss from shedding of the fruit. During such a year the irrigating plant pays abundantly.

In the matter of tillage there is a general tendency towards discontinuing cultivation during the rainy season, permitting grass and weeds to grow, and a general and thorough cultivation during dry weather. Mulching is used wherever the material can be obtained in sufficient quantity to be useful. Sod is unknown, excepting in a few cases where Bermuda grass has succeeded in

escaping. Under these conditions it becomes almost impossible to practice tillage. These orchards have to be moved and the material cut used for mulching. While it is possible and practicable to produce citrus fruits under these conditions, it is found to require more commercial fertilizer than where clean culture can be practiced, and the orchards are inclined to suffer more from drouth during extreme dry weather.

Clover crops are unknown. There are, however, efficient substitutes in velvet bean, cow pea, and beggar weed. The first named of these crops produces a heavier cover than any clover can possible make. It has, however, a great disadvantage in being a strong twiner. If permitted, a velvet bean vine would completely overrun and cover the largest citrus tree.

*Insects and Diseases.*—The San José scale problem is not of so serious consequence. The natural enemies very frequently overwhelm it and eradicate it from orchards in which it is well established. Then, too, replanting at short intervals is almost absolutely necessary to the production of the finest quality of fruit. A peach orchard in Florida is usually very short-lived.

The disease among the citrus groves known as die-back, and which was formerly one of the most serious in the State, is so thoroughly understood at present that very little damage occurs from it. A much more serious problem is before the orchardist in the form of Wither Tip (*Colletotrichum Gloeosporioides*).

An act of the recent legislature in Florida has permitted Orange County to organize itself into a special pest protection district. The present law permits the community to make an earnest effort in stamping out diseases and insect pests that are apt to become distributed from one orchard to another.

#### REPORT BY F. C. REIMER

Fruit growing is being extended in the southern portions of the State and in northern peninsular Florida. Pineapples and citrus fruits are being more largely planted in northern peninsular Florida. Citrus fruits are on the decline in the northern part of the State and in northern peninsular Florida. This is due to the freezes of 1894-95, 1899, and 1905. No fruits are grown under glass.

*Marketing.*—No changes. Railroad rates are high, due to few railroads, especially in the pineapple region, where there is but one railroad. Packing is rigidly practiced, due to fine fruit and long shipping distances. Storage is not practiced.

*Varieties.*—Among citrus fruits the trend is toward high class varieties; among pineapples, peaches, and strawberries, towards commercial kinds.

*Orchard Management.*—Irrigation little practiced. Tillage clean with mulch and cover crops. Fertilizers largely used on account of poor soil. Citrus trees are the only ones protected from frost: this is done with wood fires.

*Insects.*—The only insect that has caused alarm during the last few years is the white fly (*alyrodes citri*), which is spreading rapidly in many citrus sections. No legislation against it.

The San José scale has affected the fruit industry very little in the State.

#### REPORT BY AUBREY FRINK

I have been requested by Professor Hume to write an "item" covering the conditions in the State of Florida. In his letter Professor Hume, after requesting me to write an "item," encloses a full letter sheet literally covered

with subjects. It is astonishing sometimes how elastic some words can be, for instance this word "item," as Professor Hume has used it, would seem to mean a book. However, what Professor Hume says usually goes and I have undertaken to write the "item." Taking up the subjects in the order in which he has given them, I will try to outline the Pomological conditions now prevailing in the "Land of Flowers."

*Horticultural Industries.*—Florida has for many years been prominent as an important fruit center and is annually increasing in fruit production—very rapidly within the last few years. Hardly any section within the State but what has increased the area of orchards within the last decade. Sections particularly prominent in this respect are Dade, Manatee, Polk, Volusia, Alachua, De Soto, Brevard, Orange, Hillsborough, Lake, Hermando, Lee, and Baker Counties. This refers to outdoor orchards. There is practically no fruit growing within the State-conducted under glass.

*Marketing.*—There is a tendency in some sections toward selling fruits at home stations to northern buyers instead of shipping on consignment. The bulk of the fruit of course is still shipped to commission merchants on consignment and must necessarily continue to be so until the fruit industries of the State are more thoroughly organized. Home markets are very limited and foreign markets are scarcely considered. By foreign markets I mean markets outside of the United States. The bulk of the fruit goes to eastern markets like New York, Boston, Philadelphia, and Baltimore; although there is an increasing quantity of fruit now going to Chicago, Cincinnati, and other middle northern markets.

Transportation is as yet a serious problem. A large quantity of the fruit is now going in refrigerator cars and rates are high, especially to western markets.

Packing is more carefully done now than it was a few years ago. The tendency is toward better packing and better grading as fruit growers are gradually learning that it does not pay to ship interior fruit packed in a careless manner.

Practically no Florida fruit is being stored in cold storage in the State or in the South. Little or no attention has been paid to this phase of marketing.

*Adaptation of Varieties.*—In the Society's report, Florida is included in Section 6 and there is in addition a vast territory also included. On account of the peculiar location, shape, and extent of this territory included in Section 6 it is extremely difficult to list varieties that succeed in that section. This section should consequently be divided into several sections, for instance (considering Florida alone), in the extreme northwestern portion of Florida many fruits can be grown that are absolutely worthless in any other section of the State. In the northern portion of the peninsular the same conditions prevail, while the central portion of the peninsular has still another class of fruits and the extreme portion still a different class of fruits that could not be grown anywhere else in the Union. The latter section is more tropical and consequently many of the particularly tropical fruits are produced there.

As the subject of varieties is a pretty big one I have thought best not to try to embody it within this article, but to list on a separate form such varieties as I would recommend for the various sections of the State. This form will be found attached to this article.

*Orchard Management.*—Irrigation is practiced but little and is needed to nothing like the extent, as in the more arid sections. Here and there, however,

will be found an irrigating plant, but these are not sufficiently numerous to be considered of any importance.

The tendency in orchard cultivation is to keep the orchards clean with plow and cultivator until about mid-summer when grass and beggar weed are allowed to grow as cover crops. Clover is not so much used in this State. Beggar weed is one of the best cover crops that can be used here. The velvet beans and cow peas are used to a considerable extent as cover crops in certain kinds of orchards, but not in peach orchards. Pruning and training are given but little attention here. The trees of most commercial fruits naturally form good heads and pruning, except taking out dead wood or cutting off some straggling limbs, is not necessary in order to make trees bear, nor is it advisable from other standpoints.

Fertilizers are used extensively in nearly all sections of the State. The commercial fertilizers are generally preferred and although prices for fertilizers range quite high there are a number of brands on the market that give excellent results, and for the ordinary orchardist are preferable on account of the fact that these fertilizers have been prepared by competent men and contain pretty much the right proportions of chemicals. There is less chance of making a mistake with complete commercial fertilizers than with specially prepared mixtures.

In orchard cultivation it is customary to give the orchard a thorough plowing in the winter and another breaking in the spring. After the breaking in the spring, harrows are preferred, and, of these, light running implements like the Acme are generally used.

The subject of frost protection has about simmered down to open air fires or banking up to orange trees with earth. Covering with sheds which was practiced to some extent some four or five years ago has not proven as feasible as expected and many of the sheds have been torn away within the last two or three years.

*Insects and Diseases.*—This is a subject that the writer does not feel competent to discuss to any extent. In Florida, as in all other fruit growing sections, there are insects which give considerable trouble, but these have not proven of enough importance to cut down old, or decrease the planting of new orchards. A competent force of men at the experiment station is constantly studying this subject and giving out information to orchardists in the State. In Florida there is no legislation on the subject and the impression seems to prevail here that legislation of this character is rather a dangerous proposition to tackle. Inspection is confined to nurseries, and this is done by the entomologist of the experiment station.

The San José scale has become pretty well scattered over the peach sections of the State, but has had practically no effect on orchard planting. It has been very successfully controlled with crude oil and kerosene by some of the prominent orchardists and has come to be looked upon as only an incident in orchard management.

As to the trend of planting, whether particularly high class varieties or commercial kinds, would say that commercial kinds are given by far a greater preference and in selecting commercial kinds the tendency here with many kinds of fruits is highly influenced by the quality. As the consequence the commercial kinds generally planted are of most excellent quality, as well as good shippers and of beautiful appearance. This is particularly true in citrus fruits and peaches.

## LOUISIANA—POMOLOGICAL DISTRICTS 6 AND 7.

F. H. BURNETTE, CHAIRMAN, ASSISTED BY S. H. JAMES, A. K. CLINGMAN, ROBT. MOORE AND C. W. EICHLING.

There has been a widespread impetus given to the fruit interests of the State of Louisiana. The coming of the Mexican cotton boll weevil, the greatest enemy of the cotton industry, and the desire on the part of the farmer generally to diversify, being the most important of the several causes. The region of greatest increase in fruit planting is in the northwestern portion of the State, where the sandy uplands with red clay sub-soil furnishes a congenial home for the peach especially. In this region many new orchards have been set during the last two years, some of them being very extensive. Farmers generally have planted more fruit trees of all kinds around their homes for home use and a few vineyards have received attention.

Probably the horticultural product, however, that has received the greatest attention in all sections of the State has been the pecan. Many large pecan orchards have been set in every portion of this State, and the most promising feature is, that the very best varieties have been selected, and the finest trees obtained for the orchards, almost regardless of price. The pecan nurseries have been selling all available material, both budded and grafted trees as well as wood to be used in working over old trees. The orange industry below the city of New Orleans is steadily progressing, and the general conditions and results continue to be good.

There has been no striking change concerning the marketing of Louisiana fruit generally. The tendency seems to be towards a well packed, smaller package, and efforts to obtain better transportation and refrigerator service.

Very little, if any, storage is practiced. The Elberta peach leads all others in the commercial peach orchard, and varieties of commercial importance predominate generally. No new varieties are to be added to the Society's list in report for 1901, but two or three may be mentioned as under investigation. One of these is the Nelson pecan, which is an extremely large nut and said to be very desirable although not fully tested. Another is the New French fig which appears to be of excellent quality and able to stand transportation well. The orchards generally are receiving better care. More attention being given to tillage, better implements being used. Irrigation as yet is seldom practiced with the orchard. Enemies and diseases also receive closer attention. Insecticides and fungicides are used freely and with good results. The San José scale is found at a few points, but as yet has not produced great damage. The State Experiment Station, The Farmers' Institutes, and the Louisiana State Crop Pest Commission have done much to make the people familiar with the various pests and diseases; and the treatment necessary to control them; and there is a general movement, to be on the watch and report the appearance of pests and diseases to the proper authorities for advice and treatment.

The Louisiana State Horticultural Society has been organized, and holds annual meetings in various parts of the State. While it has not as yet a large membership, the best horticultural men are identified with the movement and the outlook for the Society is full of promise.

## IOWA—POMOLOGICAL DISTRICTS 8 AND 9.

WESLEY GREENE, CHAIRMAN.

The fruit industry of Iowa is in good condition. Orchards have done the best when planted among the bluffs. Iowa has a grassland climate, the dominant factor of which is plenty of moisture during the vegetative period followed by drier conditions while the plants are at rest. A woodland climate supplies a moist sub-soil and sufficient humidity to the atmosphere to prevent the trees from getting too dry in the winter. Long before any human agency took part in the conflict there was a fierce contest between the grasses and trees for possession of the fertile soil of the country that stretches from the Mississippi river to the Rocky mountains. In the contest of the survival of the fittest the grasses came out victorious and the trees were driven under the shelter of the hills where they found protection from the dry winter winds; here they grew less rapidly on the clay soil, ripened their wood more perfectly and could endure the dry winters better than those that grew on the richer up-land soil which failed to mature their wood. Orchards are more productive when planted in such locations because the trees are less injured by frosts when in bloom, and are in better condition to resist the attacks of fungi than those growing in a less favorable location.

Our markets are well supplied with fresh fruits in their season. The supply of summer and fall apples is usually in excess of the demand for them. There has been considerable agitation recently about transportation rates and co-operative shipping associations, but little has been accomplished beyond the agitation incident to a change, or for improvement in the prevailing methods. Cold storage and the packing of fruit for distant shipment is receiving more attention than formerly and in a measure has relieved the congested condition of the markets for summer and fall fruits.

In the southern half of the State Jonathan and Ben Davis are the most profitable varieties for market, while at the north Wealthy is a more satisfactory commercial apple. Pears are not planted to any extent, the trees blight badly and usually die before bearing a profitable crop; they have been the most successful on clay bluffs and where such a location is available they should receive more attention. The improved native plums are the most extensively planted of these fruits. The fruit of the domestica and triflora groups rot badly and the trees are not hardy enough for the northern part of the State. Peaches are only grown in excess of local demands for them in the southern counties, though the hardier sorts are grown in limited numbers farther north. Sour cherries are produced in liberal quantities over about two-thirds of the State; Richmond, Montmorency and English Morello are the leading sorts. Sweet cherries are not a success. The crops of small fruit are generally satisfactory; the surplus is shipped northward. Little attention has been given to canning or evaporating fruits, but there is a large number of factories for canning vegetables in the State.

There has been some improvement in orchard management in the last two years, but there are many orchards in sod. While trees are young the ground is cultivated with a catch crop to pay for their care until they come into bearing, then the orchard is sown to grass or clover. Commercial fertilizers are not used to any extent in orchard management, but barnyard manure is applied where available. Spraying is receiving more attention, but many of



the pests of the orchard are not yet subdued. Curculios and codling moths still perplex the grower and spoil his fruit; while leaf-spot, scab, blight, and rot are troublesome fungi that receive many maledictions mixed with the Bordeaux. The San José scale has not been introduced so far as known. The statutes provide for inspection of nurseries and orchards. Nurserymen and orchardists have co-operated with the inspector to prevent infected stock from being brought into the State. Orcharding in Iowa is not one long sweet dream where indolence can pluck the golden apples of Hesperides, but it does afford the diligent fruit grower opportunities for acquiring wealth equal to that offered by any other commonwealth.

### COLORADO—POMOLOGICAL DISTRICTS 10 AND 13.

WENDELL PADDOCK, CHAIRMAN.

The conditions which obtain in Colorado fruit growing were quite thoroughly presented in the proceedings for 1903. I find that there is little to add at the present time except to note the progress that is making in all directions.

An enormous crop of most kinds of fruit was grown in the season of 1904. Trees which had never borne before were full of fruit. Good prices were secured for most of the high grade fruit. The one exception was with sour cherries in the northern part of the State. Large profits in cherry growing in years past induced the planting of a few large orchards as well as many smaller ones. Last year the crop was much larger than ever before, consequently a glut in the markets was produced. This condition will probably be temporary.

The indications for the present season are, that in many localities, the yield will be below the average. The cause for this condition is probably due to cold weather and rains all through the blossoming period. The peach crop was with the exception of one locality almost wholly destroyed by the cold weather of last winter.

The prices for small fruits have been good and the indications are that they will hold up well through the season. Buyers have already offered \$1.50 a box for apples.

Large areas of new orchards are continually coming into bearing and many new orchards are being planted each season.—420,000 trees were planted in Mesa county this season and 400,000 in Delta county.

Most of this stock came from nurseries outside of the State, both east and west. There are several things that eastern nurserymen should inform themselves on if they expect to continue to do business in Colorado. First of all, most counties now have efficient horticultural inspectors and they, as well as most orchard men know what good stock is. And second that crown gall and wooly aphid, which are both very common in eastern nurseries, are extremely injurious under Colorado conditions. A tree infested with crown gall when planted, rarely reaches sufficient size to produce a paying crop of fruit. And, moreover, it serves as a source of infection to other trees and orchards as the organism appears to spread rapidly by means of irrigation ditches and cultivators.

Wooly aphid is almost as serious in its attacks and is next to impossible to combat. Nurserymen who expect to continue to do business in Colorado must see to it that they send us only clean stock.

Insects and diseases are multiplying rapidly, but as yet we have almost no occasion to use Bordeaux mixture, and the insects are being successfully combatted. Arsenate of lead is now the most popular of the poisons.

## NEW MEXICO—POMOLOGICAL DISTRICTS 12 AND 13.

L. BRADFORD PRINCE, CHAIRMAN.

The Messilla valley, which extends from the Texas line on the south to about Rincon on the north (a distance of about sixty miles) lies in the lower Rio Grande valley in southern New Mexico, and is one of the largest and best adapted sections in the territory for fruit growing. In the past it has been one of the largest fruit shipping centers in New Mexico. During the nineties, apples and peaches were shipped in carload lots to the markets in Colorado, Kansas City, and other northern places; while the grapes, for which this valley has a wide reputation, were shipped into Texas and Louisiana.

During the past six or seven years fruit growing has been on the decline. There are a number of reasons generally given for this state of affairs, and the following seem to be among the leading ones:

The fruit trees, which seem to be shorter lived in this section than in the north, have got too old to bear profitably. The lack of sufficient water for irrigation purposes during the summer has caused the orchards to deteriorate. The appearance of the codling moth, which is a serious pest to the apple crop, has had a tendency to stop growing this fruit. High freight rate and the decline in prices seem to be the more important for not growing grapes more extensively.

Notwithstanding the decline in fruit growing during the past few years there is new interest being taken, and a number of fruit plantations were set out during the past spring. With the bright prospects of government aid in irrigation, the fruit growing interest is increasing. With this new interest in fruit growing, better adapted varieties are expected to be planted. In the old orchards many worthless kinds are found growing. This has come about, to a large degree, from the fact that when these orchards were planted very little was known about the adaptability of varieties to this climate. However, much has been done during the past few years in the testing of orchard fruits and grapes by the New Mexico Experiment Station. People throughout the territory seem to be taking advantage of this information.

The apple crop has always been the most important one raised in the valley. Such varieties as the Red June, Yellow Transparent, Sops of Wine, Maiden Blush, Jonathan, Ben Davis, Gano, Missouri Pippin, Winesap, Kentucky Red Streak, Mammoth Black Twig, and Arkansas Black are among the most profitable.

Pears are only grown in a very limited way, but the Doyene d'Ete, Marguette petite, Clapp's Favorite, Bartlett, Idaho, Duchess d'Angouleme, Easter Beurre, Col. Wilder, P. Barry, and Josephine de Malines are good varieties. The Early Harvest is a good and heavy bearer and a very attractive pear but it is very inferior in quality, and should not be planted.

Next to the apple the peach is the most extensively orchard fruit grown. It has been found that the early ripening varieties are the most profitable, since they are more certain bearers than the late kinds. The Alexander, Arkansas Traveler, Gov. Garland, and Hyne's Surprise are among the leading early varieties; the Bequett's Free, Picquett's Late, Crothers, Crawford's Late, Old Mixon Free, Salway and the Elberta, when it bears, make a good list of late peaches.

Apricots are not grown commercially here. While the trees of the varieties tested are of greater longevity than other fruit trees, they bloom too early to escape the late spring frosts. A large number of seedling trees can be found growing in most of the home orchards. None of these seedlings seems to be really promising.

Cherries are not grown commercially in the valley. The test with this fruit at the Experiment Station shows that the sour varieties are better adapted to this climate than the sweet kinds.

While the plums are not grown on a large scale, many of the varieties are well adapted to this region. The Japanese plums have proved to be of little or no value here. All the varieties tested bloom too early to escape the late spring frosts. On the other hand the European plums do admirably. These bloom after the danger of frost is over. The Clyman, Jefferson, Imperial Gage, Transparent Gage, Yellow Egg, Pond Seedling, Robe de Sargent, and the French, German and Silver prunes are some of the leading European varieties tried at the Experiment Station.

The Mesilla valley seems to be particularly adapted to the growing of the European grapes and great possibilities are predicted in this direction. The commercial varieties at present are the Mission and the Muscat of Alexandria. These are mid-season grapes. The grape shipping season extends from about August 20th to October 1st. If early and late ripening kinds were grown the shipping season could be extended much longer. Such early varieties as the Thompson's Seedless, Chasselas de Fountainebleau, Chasselas Croquant, and the late Flame Tokay and Cornichon Black have been tried at the Station with satisfactory results.

At present, the grape has no serious insect pests. The grape crown gall, which has recently been discovered, is about the only disease that may be feared. The results of recent investigations of this disease show that it has come from California. In every case the origin of every diseased plant has been traced to California. While the disease is not yet causing very serious trouble, it is difficult to cure and the best remedy is prevention.

The stump method of pruning is practiced altogether in the vineyards, though it is believed that trellising will help materially in increasing the yield per vine.

The small fruits such as strawberries, blackberries and raspberries are practically unknown in this region. The general opinion among fruit growers is that these fruits will not grow successfully in this climate. However, the writer is of the opinion that by the proper selection of varieties and a more judicious practice of cultural methods better results may be had.

There is a great need in better marketing methods of fruit. More care should be taken in the picking, sorting, and packing of the fruit. Those of our fruit growers who take proper precautions in the packing of fruit find that it pays them for the extra work. Boxes and baskets are the packages used for shipping fruit. The forty pound box is used in shipping apples and pears, while peaches are shipped in twenty pound boxes. The ten and eight pound baskets are used for grapes.

Generally speaking the stone fruits are free from serious insect pests. The pomaceous fruits, and especially the apples, are troubled more by insects. During the past two years the wholly aphid has been causing some trouble to apple trees. The San José scale, while somewhat common, is not usually considered serious, since it is comparatively easy to control. The worst pest the apple has is the codling moth. This insect practically destroys half of the

winter apple crop in unsprayed orchards. Spraying is not generally practiced by the apple growers for the reason that they claim that spraying does not do any good. When spraying is properly done it will reduce the percentage of wormy fruit very materially. This has been shown by the results of a series of spraying experiments conducted by the New Mexico Experiment Station, which are published in Bulletin No. 41. It is necessary, however, to spray more frequently than in the east.

#### WYOMING—POMOLOGICAL DISTRICT 14.

##### AVEN NELSON, LARAMIE.

The history of Pomology in Wyoming must be written some time in the future. Fruit growing is not yet an industry in this State. Not many years since, at this altitude and under our climate conditions, it was considered not even worthy of trial. Now, however, very optimistic opinions prevail as to the possibilities in this line. The experimental stage has not been passed but enough trials have been made to show that in certain sections of the State, at least, many of the hardier fruits can be grown. Scarcely any part of Wyoming has an altitude of less than 4,00 feet and much the larger part of the cultivable area is from 4,500 to 7,500 feet above the level of the sea. This necessarily gives a short season and a low average temperature which, with the aridity, make conditions that have to be met in their own way.

As is usual in a new field, remarkable freedom from insect and fungous pests has tended to encourage experimenters. Established systems of irrigation and familiarity with the methods of water application has made relatively easy the trials so far made. Up to this time scarcely any plantings have been made except for domestic use and most of these so recently as scarcely to have reached the bearing stage. However, a few orchards on a commercial scale (for home consumption) exist. One of these situated at a town without railroad facilities bore so profusely the last season that the home consumption was glutted and luscious fruit became a drug on the market.

The small fruits have in several places in the State proven unusually successful, such berries as strawberries, raspberries, blackberries, gooseberries and currants bearing a profusion of large fruits of fine flavor. Apples and plums are really beyond the experimental stage also, white peaches and pears have in a few instances been matured. The dry atmosphere and intense sunlight tend to develop fruit of fine color.

That the State is awakening to its horticultural possibilities is evidenced by the fact of the establishment of a State Board of Horticulture by the last legislature. The accompanying printed review of the bill will give you such facts concerning this legislation as may be of interest to those studying the horticultural status of Wyoming.

##### THE STATE BOARD OF HORTICULTURE.

House Bill Number 65, creating a State Board of Horticulture for Wyoming, is a measure enacted at the recent session of the legislature of this State which is of more than ordinary interest. It is an act, the full significance and value of which, will not be fully appreciated during the next decade. It is so rare a thing to see legislation which anticipates the necessities of the years yet to come that we may well point to this as at least one instance in which "the

stable was locked before the horse was stolen." Horticulture is yet in its infancy in Wyoming, but it is in the infancy of an industry that proper safeguards should be thrown around it in order to guarantee its successful and profitable development. The horticultural plants (in the broad sense) are peculiarly susceptible to the attacks of insect and fungous pests. Wisely enough this measure seeks to exclude rather than destroy, carrying into practice the old saw, "An ounce of prevention is worth a pound of cure." The older States that are expending tens of thousands of dollars every year, merely in the hope of holding in check the diseases to which their fruits are subject, would give a great deal for the privilege of starting in again with a clean field.

Wyoming finds, as other States have found, that no serious trouble to the crop plants is to be anticipated from the indigenous insects and fungi. The indigenous insects and fungi have grown up in connection with and have adapted themselves to their indigenous host plants; and only in those instances in which the introduced crop plants are close allies do the native parasites become a real menace.

Nature undisturbed by man is largely in a state of equilibrium, each organism holding the other in check. The crop plants are such as man has rescued from the severe competition that ordinarily prevails in a state of nature. As these have been led out in lines of development which have made them of greater utility, they have, at the same time, been relieved of the necessity of self-protection against such enemies as weeds and parasites. For that reason it is now incumbent on man that he stand guard over them if he would have that increased productiveness to which they have attained.

But the crop plants, like the native plants, are each susceptible to the attacks of certain specific enemies, hence in new localities the introduced crop plants flourish marvelously until their old-time enemies are also introduced. These often find their way in, unnoticed, in connection with the seeds or plants themselves that we wish to propagate. The purpose of the bill now under consideration is to eliminate, so far as possible, just this specific danger. It provides for inspectors who shall stand guard as it were at the ports of entry.

Not many years ago the naming of a State board of horticulture in Wyoming would have been looked upon as a huge joke, but the fact that such a bill could pass our legislative body with little opposition speaks very audibly of the change that the State is undergoing or, for that matter, has already undergone. Such a board would scarcely have seemed in harmony with the conditions when the great cattle outfits dominated our broad domain. But now when farms occupy many of the broad plains, gardens flourish in the sheltered nooks and orchards shed their pink and white blossoms upon the green of our beautiful valleys it seems but natural to throw about this new phase of our development every reasonable precaution.

The bill provides for a board of six members, to consist of four appointed by the Governor, with the State Executive and the Professor of Botany in the State University as members, ex-officio. It further provides that the State shall be divided into four horticultural districts to correspond in boundaries to the four water districts—the four appointive members of the board to be selected, one from each district. The board is authorized to employ a secretary and to select for each district an "Inspector of Fruit Pests." This inspector may be the member of the board for that district or may be chosen from without the board.

The object of the bill as stated in section 7 is as follows:

"Sec. 7. For the purpose of preventing the spread of contagious diseases

among fruit and fruit trees, and for the prevention, treatment, cure and extirpation of fruit pests, and diseases of fruit and fruit trees, and for the disinfection of grafts, scions and orchard debris, empty fruit boxes and packages, and other suspected material or transportable articles dangerous to orchards, fruit and fruit trees said Board may prescribe regulations for the inspection, disinfection, or destruction thereof, which regulation shall be circulated in printed form by the Board among fruit growers and fruit dealers of the State, and shall be published at least ten days in two horticultural papers of general circulation in the State, and shall be posted in three or more conspicuous places in each county in the State, one of which shall be at the county court house thereof."

The bill also provides that only such nurseries may do business in the State as shall first obtain a license and shall deposit a bond to guarantee the observance of the requirements of this law. Proper provision is made for the enforcement, under penalty of the requirements of the law as they relate to all who are in any way connected with the horticultural industry, including the common carriers of both the products and the nursery stock. The bill seems to be very comprehensive and if its provisions are rigidly enforced it ought to secure for Wyoming, for all time immunity from any serious invasion by the now known orchard or garden pests.

## OREGON—POMOLOGICAL DISTRICTS 15 AND 16.

E. R. LAKE, CHAIRMAN.

Horticultural plantings continue to be active. The apple, cherry, pear, prune, peach and small fruits head the list.

As the State is divided into four quite distinct fruit growing districts so we find as many different sets of conditions prevailing as to the plantings. However, at present, the apple possesses first place in all districts and is being planted more extensively than at any period in the history of our horticulture. In southern Oregon the pear takes second place, in the Willamette valley small fruits and prunes divide honors for second place, while the strawberry holds strongly second position in the plantings of the Columbia river basin, but there is no very marked second choice in eastern Oregon. On the whole, while there are, possibly, fewer large individual plantings recently, there is a much more general planting on the part of home builders throughout the whole State. As the people become more settled home builders their attention is given to a better supply of fruit, hence more plantings. Then, as the mineral interests this north pacific coast develop, the market for fruit steadily grows and this market, which is measurably local our people are endeavoring to supply.

Marketing methods remain about the same as for the past few years. Attention to cold storage and refrigeration is keen, though no very pronounced progress has been made in this line. Agitation looking toward the insurance of only first quality product and first quality pack for foreign markets still continues.

As to varieties of fruit it may be said that at no time in our past did we give such attention to the selection of varieties for the different districts, different soils and different uses, as we are giving today. With our advance in fruit growing we are learning that the general purpose, variety, is a thing of the past. Each section is showing that certain varieties do best, and while some do well in all districts the careful planter is giving much attention to local fitness.

Thus far we have no definite lists for the various sections and uses, but tentative lists are given in our State Board of Horticulture reports. One topic to which we assign much thought today is that of pollination. Much interest has been awakened in this matter because of the disposition to plant large blocks of trees in order to effect the economical handling of the culture problems and the crop. Our findings are yet only in the preliminary stage, but many interesting future problems have been brought into the open.

The most notable advance in legislation is the act of our last legislature creating county inspectors, appointed by the county court with the approval of the State Board, and their services paid for by the respective counties.

The melon wilt has made its appearance in a disastrous way in a small isolated valley in the southern part of our State. An active campaign against it has begun and hopes are entertained that it will be eradicated or subjugated in a short time.

Among the newer fruits that flourish in our district is the Loganberry, which thrives particularly in western Oregon.

## FRUIT REPORT FOR SOUTH DAKOTA.

N. E. HANSEN, EXPERIMENT STATION, BROOKINGS, S. D.

Fruit culture is assuming year by year greater proportions in the prairie Northwest. The failures of earlier years have caused changes of methods, hardier varieties are being selected, and recent good fruit crops have inspired renewed courage. Very probably some of the early failures will be repeated by the new settlers, but on the whole substantial progress is making along all lines horticultural.

So far the main fruit area has been in a few counties in the southeastern corner of the State south of the north line of Iowa the oldest settled region of the State; and under irrigation in the Black Hills in the southwest corner. The general tendency is for this fruit belt to extend north and northwestward with the increase in population. But with each mile into this newer territory the liability to trouble from winter killing increases. Especially is this true of the ordinary commercial stocks or roots. That is, much greater success would be attained were the root-killing trouble more generally understood.

In the plum the northwestern nurserymen are much more careful than formerly in their choice of stocks. For the native varieties of the *Prunus Americana* and *nigra* type, which are the only ones of any value for this region, it is recognized that only seedlings of the same species should be used. To use Myrobalan, St. Julien, Marianna, peach, Southern Chickasaw, or other stocks native to a milder climate, is only to invite disaster.

With the apple, the Siberian crab, *Pyrus baccata*, and hybrid Siberian, *P. prunifolia*, are coming to be recognized as hardier and safer stocks at the North, as was found long ago to be the case in the northern orchard belt in Russia.

At the Experiment Station at Brookings the fruit-breeding work under the present writer's direction is yearly assuming greater proportions. Two years ago the number had reached a quarter of a million seedlings, and there has been no time for a full census since. Some good plums, strawberries, raspberries, and sand cherries have appeared as a result of the work, and under propagation.

As an example, a plantation of over 25,000 western Sand cherries (*Prunus Besseyi*) of the third generation under cultivation, was gone over this season (1905), and plants found bearing fruit an inch in diameter, and of good quality. About 70,000 Sand cherry plants are now on hand, including many of the fourth generation, under cultivation.

In general, the plan of the work is to cross the native South Dakota fruits with the cultivated ones in order to secure new varieties combining the hardiness of the wild with the size and quality of the tame.

The following three reports from other parts of the State were received in reply to my letters of inquiry:

### FRUIT REPORT FROM THE SOUTHEASTERN CORNER OF SOUTH DAKOTA, JULY, 1905.

E. D. COWLES, VERMILLION, SOUTH DAKOTA.

**APPLE:** If the setting of trees is any sign of prosperity, then we are prospering. I think an average of every other farmer in three counties of this corner has put in an orchard in the last three years. Our knowledge of marketing is undeveloped, so we had a surplus last year, many fall and summer apples rotting on the ground. The tendency this spring was to set winter apples, Northwestern Greening, Ben Davis, Rawles Genet, and Seek-no-further, being the leading varieties. With cold storage an orchard of Wealthy is a fortune here. Some Russians planted, but not many; quality off.

**CRABS:** The call is still for the Transcendent, and only as we have something that comes near to it can we supply the demand. Florence yields good crops, and is as free from blight as any. Martha, when near other trees that bloom at the same time, and Virginia, fill the bill for quality and yield some profit. Minnesota and General Grant, good bearers but off on quality. I know of no commercial crab orchards.

**PLUMS:** The rust has upset our calculations on this fruit, coming on in July and reducing size of fruit and ruining the keeping qualities. No remedy found as yet. Curculio not serious. The natives, especially the De Soto, Forest Garden and Wyant, are well filled with fruit this year. Our money has come from the plums with Miner blood in them. Nothing but clean culture has given satisfaction here with plums.

**CHERRIES:** When set on well drained land the sour cherries seem to be perfectly hardy, and where mulberries are planted for birds the crop is quite profitable. Early and Late Richmond on own roots are the trees for this climate. Montmorency and Wragg are liked better by strawberry men, as the picking comes after the rush is over. Quite a number of orchards of one acre or more have been set in the last two or three years.

**GRAPES:** After the losses of earlier years we are again raising grapes. We lay our losses to insufficient moisture during August and September when the wood should be ripening, and to our open dry winters. Janesville and Beta bear here without cover, and Concord has borne two years without cover, but with a visible weakening of vine and reduction of bunch. We give clean culture except to grow a cover crop to shade ground in August. Concord, Worden, and Niagara, give paying crops. We cover with earth and afterwards with coarse litter, hauling out litter in spring.

**STRAWBERRIES:** We realize more money from this fruit in this section than



from any other. Are in experimental stage as to culture. The man who makes the most money from his berries gives clean culture the first season. Then, after picking berries, mows the patch and forgets all about it until spring, dragging down the dead weeds and finding a good crop of berries underneath. We cover lightly with litter from the livery stables as far as possible, using straw when compelled to. Bederwood and Warfield have been our crop berries, but like all good things seem to be running out. Dunlap and Parson's Beauty are the leading varieties now. Sample and Oregon close seconds.

RASPBERRIES: We are now putting in raspberries commercially. They will not do here without winter cover. Columbia yields the heaviest crop. A neighbor averaged a quart to five plants three times a week for six pickings. Loudon giving good satisfaction. Kansas is our best black (hardest). Cumberland our handsomest berry, but not so good a cropper. We give clean culture and raise cover crop between. I made a sled to drag over and hold the canes down while a man on each side shovels dirt on, and thus covers half an acre per day. I afterwards cover with straw, taking straw off in spring.

#### REPORT FROM SOUTHEASTERN SOUTH DAKOTA.

This section of South Dakota is flourishing along pomological lines. Interest is active and conditions very promising. Last year, it is well understood, was a good apple year the world over, and we produced apples in this section in abundance. Every orchard was well filled with fruit and this year's prospect is fair. Last year the output of the orchard owned by us (Prosser & Sons) was 22,000 bushels of apples. This orchard, of which Mrs. L. A. Alderman was the promoter, contains 140 acres of orchard and smaller fruits. There are about 7000 bearing trees (apple), five acres of Forest Garden plum, five acres of strawberries and a nursery. It is hardly presumption to say this orchard contains a block of Wealthy, the largest in the world. It is the largest in the State and probably in the Northwest. There are many small orchards here, ranging from an acre to twenty in size. These contain apple, plum, cherry, the Russian Mulberry tree and the smaller fruits. The Russian Mulberry affords a good windbreak and food for birds while cherries ripen, and is good for culinary purposes too. Choosing variety the apple, plum and cherry are favorite with planters, and the strawberry leads the other lists, here.

The prevailing varieties here among larger apples are Tetofsky, Yellow Transparent, Haas, Oldenburg (Duchess), Wealthy, Wolf River, Plumb Cider, Northwestern Greening, Patten Greening, McMahan White, Tolman Sweet, Fameuse, or Snow, Rall's Genet, and Peerless. Among crabs and hybrids: Brier Sweet, Virginia Crab, Hyslop, Martha, etc.

Among Cherries: Early Richmond, Later Richmond, Wragg and Ostheim.

Among Plums: Forest Garden, De Soto and Miner.

Among Strawberry: Crescent and Bederwood.

Raspberry: Loudon and Turner.

Grapes: Janesville, Concord and Worden.

In managing the orchard, mulching should be done while ground is frozen about every third year. Prune in March or June. Sever heavy limbs if damaging to tree. If trees are not too close together begin early cultivation with disc and keep this up till the latter part of July. This will furnish a dust blanket—the best irrigation. If too close we have sown clover among trees and this gives good results. Blue grass is a poor thing around trees. Have no new diseases here. Blight and scale are sometimes prevalent, but this season, so far, have had very little blight. Insects common here are the tent caterpillar, May

beetles and plum curculio. Spraying with Bordeaux mixture is the remedy except for beetles. Have noticed a few black plum knots.

In this section the marketing of early apples is done in bushel crates or barrels, ventilated by boring through on sides with inch augur. Strawberries are marketed in 16 or 24 quart crates; so are cherries; plums sold by the bushel.

In storing fruit, well colored fruit is supposed to keep better, but it is not practicable always to wait for color. The Wealthy is a wonder at keeping in cold storage. Quails are protected by orchardists here as being the most valuable of useful birds.

PROSSER & SONS,

Hurley, South Dakota.

SECOND REPORT FROM MR. PROSSER.

In making my report I meant to represent only this locality and had not thought the varieties mentioned would cause farmers to generally plant such varieties as your letter names. I can conscientiously advocate what I believe. The Snow apple trees planted here by L. A. Alderman, have borne crops successively, while not as Mrs. L. A. Alderman says a great success from the point of production. I simply state that as per report you will notice, I think it reads: Among Among varieties: Fameuse (Snow); Rall's Genet, etc. These are growing on our farm. The Tolman Sweet seems healthy. The Rall's Genet I suppose will go out another year, but only, I think, on account of having about one-half of itself being blown off in 1902. The other Rall's Genet was completely demolished. Now these are the particular data in regard to these mystic varieties. If I had thought farmers generally might plant them, I had rather change the report, but again I say, they seem to do in this section. Mr. Rector has in his orchard what he calls Tolman Sweet, Ben Davis, Martha Crab; Mr. J. Andrews: Ben Davis, and I think Winesap. As a result, I believe of Mr. Gurney's model orchards planted some years ago. Time makes some difference I guess. Mrs. L. A. Alderman, reports at the Sioux Falls meeting, Page 377, of *Trees, Fruits and Flowers of Minnesota 1901*, "The Haas, while not of the first degree of hardiness, will repay the planter in our part of the state, although I would not recommend it for planting farther north. The same may be said of the Wolf River. It is one of the few varieties injured on our grounds in winter of 1898-9. Fameuse is practically a failure. . . . Rall's Genet (Rawles Janet), surprised us with a full crop on a single tree planted by mistake in a row of Duchess," etc; she says they would be well to try in the extreme southern portion, the Rall's Genet, I mean. Now, Mr. Hansen, perhaps I was not explicit enough in my report. I thought it would be read with due allowance in regard to the hardiness, etc., by the learned convention. I do not wish it understood that I consider my remarks to be taken from experience gathered at large. I am not old in the business at all. Am an amateur, however, when I see several trees of the varieties mentioned that are aged and bearing, I am inclined to think them worthy of some merit, yes, considerable merit. I would plant some if starting an orchard. Your scope of observation is such that I would confine myself largely to your list.

WILL I. PROSSER.

FRUIT CULTURE IN THE BLACK HILLS.

F. L. Cook, Spearfish, South Dakota.

Twenty years ago when I came to the Black Hills and found conditions of altitude, soil, and climate very different from any of which I had practical knowledge, I lost no time in trying to learn through extended observation what fruits

are adapted to this region. I was disappointed in getting much information of value, for in that early day there seemed to be no one growing fruit who had any previous knowledge of the business. The limited efforts made in this direction were therefore of necessity mainly unintelligent and uninformative.

After five years of unfruitful observation, it occurred to me that I might render some service to the Black Hills people, and at the same time get some relief from the bad effects of too close confinement to school duties, which was threatening to break down my health, by instituting an elaborate and long continued series of experiments with fruits, with a view of throwing light on the question of what can be made to pay commercially.

Having no land of my own, I leased five acres of unused Normal School land for a term of six years at \$10 per year per acre. The problems to be solved were, first, what fruits can be profitably grown in the Black Hills; second, what varieties of these fruits are best adapted to this particular locality. One of the most vital truths in fruit culture learned in my boyhood days, a truth of great value to me now, as I was about to attempt the solution of the problems named, was that varieties are very local, in their behavior, some of them much more so than others, to be sure, but that the fact that a variety of strawberries, raspberries, currants, etc., does well in one locality is no guarantee that it will not be worthless in another. Most people think it matters little what variety they set, and they usually fail to get a sort adapted to their locality. This lack of knowledge will account for half the failures in fruit growing. This is a matter of so much importance that I will endeavor to make it still plainer by relating some of my personal experiences in illustration. In carrying out my general plan it seemed indispensable that every variety of berries prominent commercially in any section of the northern states should be carefully and repeatedly tested. This would cost many hundreds dollars. I proposed therefore to try to meet a part, at least, of the expense by putting in for market purposes a comparatively large acreage of one or two sorts of each fruit, selecting the sort most profitable in some other localities. I chose for my money makers, not to stop to give the whole list, the Haverland strawberry, fertilized with the Lovett, the Cuthbert red raspberry, the Victoria currant. Every one of these famous varieties, except the Lovett strawberry, proved a total failure. I continued to try them for years on different soils and with differences of culture, but in vain. In some regions they are the most profitable of varieties; in the Black Hills worthless.

As to the kinds of small fruits that may be profitably grown in the Black Hills, I met with some great surprises. Strawberries, red raspberries, dewberries, currants, and gooseberries, providing the right varieties are selected, and the best of care given, are enormously productive, but I am acquainted with no other region where the number of successful varieties of these fruits is so limited. Even more than elsewhere, then, success depends upon getting varieties suited to the locality. Blackberries, black cap raspberries, and the hybrid raspberries of the Columbian type can, on the average, be made to produce no more than half a crop, and are therefore unprofitable commercially.

I have tested upwards of seventy-five varieties of strawberries, including almost all the great market sorts. Of these less than a dozen can be grown with profit here. Among the good ones are Warfield, Senator Dunlap, Bederwood, Splendid, Woolverton, Glen Mary and Clyde. The first named only, in this list, is a pistillate and must be set with a perfect flowering kind to make it bear. It is doubtful whether it would be possible to choose two more prolific varieties than Warfield and Senator Dunlap; set two rows of Senator Dunlap, two rows of Warfield, and so on alternating. Whatever one sets, he should get plants that

have never borne, that is to say, less than a year old, early in spring (fall is not nearly so good a season), from a special grower of strawberry plants. Set them three and a half by one foot, spreading the roots out fan shape, putting them straight down in the ground and packing the dirt so firmly that the plant cannot be pulled up by a single stem. They should then be cultivated about once a week the entire season, turning the runners into the row forming a matted row from twelve to eighteen inches wide. In December the bed should be covered deep enough to hide the plants with clean straw. In the spring after the ground has stopped freezing, the straw should be parted from the rows and left in the paths, to keep the ground moist, the fruit clean, and the pickers out of the mud. After bearing, the straw should be promptly removed, and the same method followed as before until about three crops have been produced, when the bed should be plowed up and the ground used no more for strawberries for several years. The first season no attempt should be made to get berries, but the blossoms should be picked off.

It will of course be understood by readers of this article that new varieties of fruits are being originated each season, and that while many of these new varieties are worthless, a small per cent of them are so good that in the course of a few years the present varieties will be largely displaced by new ones. I am therefore giving what are best now, with the understanding that they will in time be superseded by something better. Professor Hansen of our own agricultural college, Luther Burbank of California, and to a less extent a multitude of others, are doing a work of incalculable value in originating new and desirable fruits, and there can be little doubt that within the next ten years the two great horticulturists named will give us varieties of some of our well known fruits more valuable than anything now grown.

It has been my aim to test for this region every promising variety of red raspberries also. A few of the sorts tried are the Loudon, Philadelphia, Turner, Queen of the Market (Cutlbert), Shipper's Pride, Miller, Thwack, Marlboro, Brandywine and Thompson's Prolific. Two of these varieties Loudon and Marlboro, have for a series of years, proven more than twice as productive as any others, and are therefore emphatically the sorts to grow in the Black Hills, until something better is found. The Marlboro is about a week earlier, so the two make a good complement.

One putting out red raspberries should be very careful to get plants free from the two most common diseases that at present afflict raspberries, anthracnose and the yellows, to set the plants in the fall (spring will do, but is not so good a time for red raspberries as fall), to leave the canes a few inches long, so that the location of the hills may be seen, to throw a forkful of litter over each hill for winter protection in December, and in the spring to remove the mulching and cut the canes back as far as convenient. Raspberries, like strawberries, should be cultivated often. Enough suckers should be allowed to grow to form a continuous row from twelve to eighteen inches wide, the surplus suckers being treated as weeds. The second fall after setting and each fall thereafter, unless the bed is in an unusually sheltered place, the canes should be bent to the ground, in the line of the row, all in the same direction, and covered out of sight with earth. Nothing else is so good as dirt for this purpose. After the night freezes are nearly or quite over in the spring, the canes should be raised with a fork and the ridges carefully leveled. With proper care a raspberry plantation will last at least a dozen years. After years of extended experiments in pruning red raspberries, I have concluded that with the exception of the thinning out of the weak canes each summer, to prevent the rows from

getting too thick, no pruning or heading back of any description pays. The bearing canes of all raspberries, blackberries and dewberries die immediately after bearing, and should be removed and burned without delay.

Black cap and purple cap raspberries should be set in the spring. Spring setting is preferable for blackberries, dewberries, currants and gooseberries. Those who wish to grow black and purple cap raspberries, and blackberries, in spite of the fact that they do poorly in this altitude, will find the Cumberland, Eureka and Kansas black caps, the Cardinal and Columbian purple caps, the Ancient Briton and Snyder blackberries good varieties. In midsummer, as soon as new canes reach a height of about eighteen inches, they should be headed back. In the spring it is a good thing to cut back severely. They require the same winter protection as red raspberries.

Dewberries are productive, but only an expert will be able to make them pay for market.

After years of trial of all the leading varieties of gooseberries, including the best English sorts, I am prepared to say that the Downing is the best of all, and that gooseberry culture may be made to pay well in the Black Hills.

Fifteen years ago I set the first currants for trial of Hills conditions, and there is not an important variety of red, white or black currants but has had extensive trial through years of time on my grounds. Among the best known sorts that I have grown by the hundred plants are Knight's Improved, London Market, Pomona, Fay, Red Cross, North Star, Red Dutch, white Grape, White Transparent, Victoria, Prince Albert, Wilder, Long Bunch Holland, Cherry and Versailles. The first two named are more than twice as profitable as any others of which I have knowledge. They have been so on my grounds for years. Last year I gathered about the usual crop of Knight's Improved, viz., 4320 quarts from six rows, each eighteen rods long. The fruit is admirable in color, size, and flavor.

Perhaps I had better mention here that I have not now and never have had any fruit plants to sell.

Though I now have forty-five acres in fruit, my largest acreage of small fruit was nine acres. My largest crop of small fruit was, in round numbers, 60,000 quarts which sold for \$6000.

When I bought land of my own it was my plan to put it all out to large fruits, mostly apples, and to grow small fruit only so long as it could thrive among the young trees. In carrying out that plan I have for three years been gradually reducing my small fruit.

It seems to be pretty well established that apples, plums, and pears will do better in the Hills than in any other part of South Dakota. In the Southern Hills cherries are also proving to be very profitable. Blight may, however, prove to be a serious obstacle to the growth of pears.

Within ten years I hope and expect to see this region recognized as one of the best, perhaps the best, of the fruit growing sections of the North Central States.

## PORTO RICO.

H. C. HENDRICKSEN, CHAIRMAN.

*Citrus Fruits.*—The rough lemon, sour orange, bitter sweet, as well as the common sweet orange can be found growing wild anywhere in Porto Rico. The sweet seedling commonly found, is of fair quality considering that it grows without any care whatever. Over 30,000 boxes of this fruit were shipped in the season of 1903-1904 and much more in 1904-1905. This amount of fruit

was not nearly all that was produced on the island; as a matter of fact, it was probably not over one-third of the actual amount grown. This will readily be understood when it is known that much of the finest fruit is produced in the mountainous district in the interior, where there are no roads except the winding mountain paths, passable by the small sure-footed horses and mules only. When this fruit was first shipped, it was handled very roughly and hauled in ox-carts to the packing houses nearby the steamship wharf. However, the method of handling has been greatly improved and the packers are now often buying the crop on the trees and picking with some care as well as packing the fruit near the place of production.

Citrus fruits have been planted extensively the last two years and it is estimated that about 10,000 acres are under cultivation. While most of the seedling trees are growing in the heavier clay soil on the west end of the island, nearly all of the planted groves are located on the light sandy soil near San Juan and along the railroad and the ocean from San Juan to Arecibo. Those groves, when properly cared for, are in good condition, but with a lack of knowledge and proper management orange growing is no more of a success in Porto Rico than anywhere else.

The methods of cultivation are similar to those followed in Florida and although fairly successful, certain modifications would unquestionably give better results. In cultivating varieties, which by improvement often lost in hardness and disease resistance what they gained in quality and usefulness, the grower should learn to take advantage of all the natural conditions and in that respect the American pioneer in the tropics could learn considerable from his British cousin.

As to the relative value of the different varieties and the quality of the cultivated fruit but little can be said at the present time, as the industry is yet in its infancy. But there is a large field for the Pomologist in working up a number of very valuable varieties among the seedlings found scattered over the island.

*Pineapples.* The variety of pineapple commonly called "Porto Rico" is here grown under the name Cabezona, its cultivation was until recent times, mostly confined to a few fields at Palmarejo, near the town of Lajas on the west end of the island. According to information obtained from growers in that district, it appears that the variety originated from a few plants introduced from India forty to sixty years ago. Different strains, one or two of which are by this time distinct enough to be called varieties, have developed from these original plants. There are by this time about 150 acres planted at Palmarejo, much of which is not bearing yet. This region produced in 1904, 140,000, and in 1905 about 200,000 fruits which were all worked up by a canning factory located at Mayaquez. Another canning factory was this year located at Bayamon near San Juan, where mostly Red Spanish has been planted. By estimate, the San Juan section produced this year about 10,000 fruits for canning and 50,000 for shipping to United States. The Red Spanish thrive fairly well here, in many different classes of soil. The Smooth Cayenne has also been tried with varying success. Three other varieties, *viz.*: Pan de Azucar (sugar loaf), Negrita and Caraqueña are growing half wild here and there on the island, but neither is extensively cultivated. The Caraqueña is undoubtedly a new variety; not listed in your 1901 catalogue. The Negrita may be a synonym of the Black Antique or the Black Jamaica or some variety not known to the writer. They, however, will be reported upon before your next meeting, as many varieties are now growing side by side on the Experiment Station grounds.

*Bananas.*—The banana may be found growing in many places without cultivation and in nearly every dooryard more or less neglected. It forms one of the chief food supplies of the poorer people and indeed of the better class as well, as it enters into the diet of every family on the island in one form or another. It is not at the present time grown for export, although there seems no reason why it should not form a remunerative industry. The varieties are very numerous and ought to be catalogued.

*Mangoes.*—The mango has not so far been cultivated in Porto Rico, but it grows in fencerows and by the roadside, where it produces a great amount of fruit in spite of many hardships of nature and abuses of man. The tree will withstand extreme drought and flourish in almost swampy places. It is one of the best trees for windbreaks as it forms a compact symmetrical head, which is rarely injured by heavy storms. The amount of fruit produced would be enormous if the trees were not molested by man, but as fuel is scarce in Porto Rico, the limbs of the mango tree are very often cut off and used for charcoal. This butchering process may be continued without killing the tree, but as the mango produces fruit on the well matured wood only the fruitfulness is of course greatly impaired. The quality of the fruit is mostly the proverbial tow and turpentine, although occasionally a tree may be found which bears a better grade of fruit. Very often the varieties are difficult to distinguish and the varietal names in common vernacular can usually not be relied upon. Undoubtedly the production of mangoes will some day equal if not excel the production of citrus fruits, but although the mango tree grows without care it should be well understood that for successful cultivation it should be propagated asexually from the best varieties obtainable in India and the West Indies and receive the same care as an orange tree under the same conditions.

*Avocados.*—This fruit reaches perfection in Porto Rico. Like the mango it may be found scattered around in fencerows and old fields, although not in so large numbers. It grows very readily, but it will not stand abuses to the same extent as mangoes. Very little fruit has so far been shipped and very few attempts have been made to grow it commercially. The avocado is not difficult to propagate and as it is both vigorous and prolific in Porto Rico there is no apparent reason why this island should not supply the U. S. with a large share of the avocados consumed. Of course, there are but few consumed at the present time, mainly on account of the supply not being equal to the demand. It would not be difficult to increase the demand with a regular supply of a good uniform grade of fruit at a reasonable price.

*Cacao.*—This is not produced in large quantities, but many of the coffee estates have a few trees for home use and a considerable amount is also sold and manufactured into chocolate. Cacao can undoubtedly be profitably grown in most of the sheltered valleys which are now planted to coffee. Apropos of coffee, why is that not listed in your catalogue? It is one of the chief crops of Porto Rico.

*Cocoanuts.*—Cocoanut is another crop of Porto Rico of no mean importance. A large amount of nuts are exported every year and a still larger amount consumed on the island. The cocoanut is a paying crop when grown in large quantities, but there are but few large tracts of land adapted to the cultivation of cocoanuts, which would not also be adapted to sugar cane and that of course is the more profitable crop.

*Marketing.*—The shipping facilities are very inadequate. There are weekly sailings from San Juan, making the trip to New York in four to five days. Freight from other ports on the island is shipped by way of San Juan and is

necessarily in transit two to three days longer. With the exception of one wharf in San Juan, all the loading is done by lighters and seldom handled as carefully as perishable fruits ought to be. The steamer always carries a mixed cargo, such as sugar, coffee and fruit, which, readily accounts for some of the failures in fruit shipping.

This, however, should not deter prospective planters as it is well understood that transportation follows very close in the wake of production.

*Insects and Diseases.*—The most noteworthy fact in regard to that subject is that at the last session of the legislature, a law was passed prohibiting the introduction of coffee, citrus, and cotton, unless certified that the plants or seeds are healthy. In addition to that all imported plants are inspected at the port of entry.

A horticultural society was formed recently, which counts among its members some very able horticulturists, and which will no doubt be glad to co-operate with your Society to mutual benefit. In the meantime any information desired by your Society or an individual member will be gladly forwarded.



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