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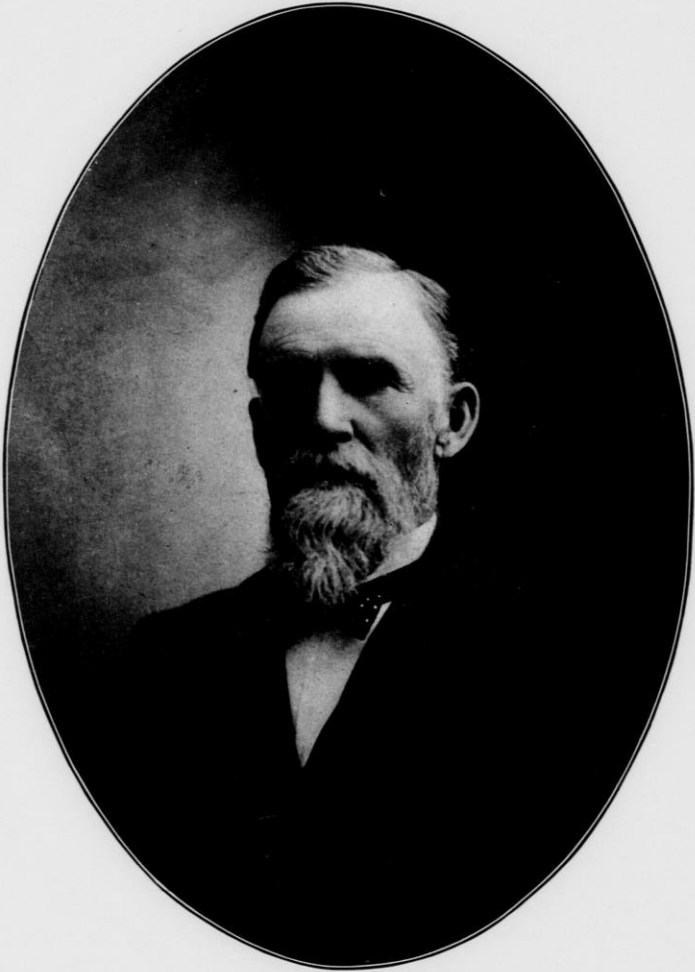
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CHARLES G. PATTEN.

ANNUAL REPORT

OF THE

Wisconsin State Horticultural
Society

FOR THE YEAR 1907

VOL. XXXVII

F. CRANEFIELD, Secretary

MADISON, WIS.



MADISON, WIS.

DEMOCRAT PRINTING COMPANY, STATE PRINTER

1907.

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JUL 29 1907

LETTER OF TRANSMITTAL

MADISON, Wis., March 1, 1907.

To His Excellency, JAMES O. DAVIDSON,
Governor of Wisconsin.

DEAR SIR:—I have the honor to transmit to you herewith the Thirty-seventh Annual Report of the Wisconsin State Horticultural Society.

Respectfully,

FREDERIC CRANEFIELD,

Secretary.

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CONSTITUTION AND BY-LAWS

CONSTITUTION.

Article I. This society shall be known as the Wisconsin State Horticultural Society.

Article II. Its object shall be the advancement of the art and science of horticulture throughout the state.

Article III. Its members shall consist of annual members paying an annual fee of one dollar excepting that paid members of local societies may become members on payment of an annual fee of twenty-five cents, of life members paying a fee of five dollars. Wives of such members shall be entitled to the privileges of full membership; of honorary annual members who may by vote be invited to participate in the proceedings of the society and honorary life members who shall be distinguished for merit in horticulture and kindred sciences or who shall confer any particular benefit upon the society.

Article IV. Its officers shall consist of a President, Vice-President, Secretary, Treasurer, and an Executive Committee, consisting of the foregoing officers and additional members, one from each congressional district of the state, five of whom shall constitute a quorum at any of its meetings. All above officers, except Secretary, shall be elected by ballot, and shall hold office for one year thereafter, and until their successors are elected. The Secretary shall be appointed by the Executive Committee at the annual meeting, after the election of officers, and shall hold office for one year thereafter, or until his successor is appointed.

Article V. The members of the Executive Committee from the several congressional districts shall be chosen by the delegates of their respective county or local societies present at the annual meeting of this society, or in case of the absence of delegates from such societies or in case of failure to elect, such members shall be chosen from among the members of this society present from such districts. But if any district is not represented the vacancy shall be filled by vote of the members of this society present at the annual meeting.

Article VI. The term "County and local horticultural societies"

shall include any organization that shall have for its sole object the advancement of the interests of its members in the growing or sale of horticultural crops; provided, that such society acts by authority of a regularly adopted constitution and makes an annual report to the Secretary of the state society.

Article VII. The society shall hold its annual meeting for the election of officers, exhibition of fruits and discussions, in Madison, commencing on the first Tuesday of February of each year and such other meetings and at such time and place as the Executive Committee may direct.

Article VIII. The President, Treasurer, and Secretary shall constitute a Board of Managers which may conduct any business deemed necessary for the society in the absence of the Executive Committee. All bills against the society must be audited by the Board of Managers before being paid.

Article IX. This constitution, with the accompanying by-laws, may be amended at any regular meeting by a two-thirds vote of the members present.

BY-LAWS.

I. The President shall preside at meetings, and, with the advice of the Secretary, call all meetings of the society, and have general supervision of the affairs of the society, and shall deliver an annual address upon some subject connected with horticulture.

II. The Vice-President shall act in the absence or disability of the President, and perform the duties of the chief officer.

III. The Secretary shall attend to all the correspondence, shall record the proceedings of the society, preserve all papers belonging to the same, and superintend the publication of its reports. He shall also present a detailed report of the affairs of the society at its annual meeting. He shall also endeavor to secure reports from the various committees, and from local societies of the condition and progress of horticulture in the various districts of the state, and report the same to the society. He shall also be Superintendent of all Trial Orchards. It shall be the duty of the Secretary to make a report to the governor of the state of the transactions of the society, according to the provisions of the statutes for state reports.

IV. The Superintendent of Trial Orchards shall supervise the planting and cultivation of the trial orchards and trial stations and shall exercise general control of the same, subject to the directions of the Trial Orchard Committee.

V. The Treasurer shall keep an account of all moneys belonging to the society and disburse the same on the written order of the President, countersigned by the Secretary, and shall make an annual report of the receipts and disbursements, and furnish the Secretary with a copy of the same on or before the first day of the annual meeting. The Treasurer elect shall, before entering upon the discharge of the duties of his office, give good and sufficient bonds for the faithful performance of his duties subject to the approval of the Executive Committee.

VI. The Executive Committee may manage all the affairs of the society and fill all vacancies in the board of officers; meetings of the committee may be called by the President, the Secretary or by the Secretary on written request of five members.

VII. Regular meetings of the Board of Managers shall be held bi-monthly to audit accounts and transact other business; special meetings may be called by any member of the Board.

VIII. The standing committees of this society shall be as follows:

1st. Committee on Finance, consisting of three members.

2d. Committee on Nomenclature and New Fruits, consisting of three members.

3d. Committee on Trial Orchards and Trial Stations, consisting of three members, and such other committees as may be determined from time to time to be necessary. Said committees to be appointed annually by the President.

IX. It shall be the duty of the Finance Committee to settle with the Treasurer and to examine and report upon all bills or claims against the society which may have been presented and referred to them.

X. The Trial Orchard Committee shall have general control of the locating, planting and care of all trial orchards or trial stations, and shall visit collectively each orchard or station once each year or oftener if deemed necessary. Meetings of the committee may be called at any time by the President of the society or by the Superintendent of Trial Orchards.

MEMBERSHIP ROLL

Life Members.

Allis, Frank W.	Madison
Ames, W. L.	Oregon
Ayer, Ed. E.	Lake Geneva
Babcock, O. W.	Omro
Barnes, A. D.	Waupaca
Brown, F. G.	Madison
Buckstaff, D. C.	Oshkosh
Bussey, W. P.	Omro
Carpenter, L. A.	Fond du Lac
Carver, N. E.	Bayfield
Cashman, Thos. E.	Owatonna, Minn.
Chandler, S. S. Jr.	Waupaca
Chappel, F. H.	Oregon
Coe, R. J.	Ft. Atkinson
Cole, W. B.	Pleasant Prairie
Converse, D. C.	Ft. Atkinson
Davis, Prof K. C.	to: Dunn County School of Agriculture & Domestic Economy, Menomonie, Wis.
Eaton, B. A.	S. Milwaukee
Edwards, F. C.	Ft. Atkinson
Fancher, W. E.	Corliss
Fiebing, J. H.	Baraboo
Foley, M. F.	Baraboo
France, N. E.	Platteville
Freeman, Roy F.	Racine
Guilford, W. S.	Pecatonica, Ill.
Guttman, A.	Manitowoc, Wis., for Manitowoc Seed Co. Manitowoc
Hager, W. S.	West DePere
Hanchett, W. H.	Sparta
Harden, F. A.	Weyauwega
Harland, F. W.	Milwaukee
Harris, N. W.	Lake Geneva

Herbst, J. L.	Sparta
Hudnall, Geo. B.	Superior
Hutchinson, C. L.	Lake Geneva
Johnson, Franklin	Baraboo
Johnson, Chas. G.	Clintonville
Jones, G. D.	Wausau
Jones, John D.	Elk Grove
Joys, A. M.	Milwaukee
Kellogg, L. G.	Ripon
Kellogg, Geo. J.	Lake Mills
Kellogg, M. S.	Janesville
Kierstead, E. H.	Oregon
Knight, Wm.	Bayfield
Koehler, John N.	Milwaukee
Kremers, Prof. E.	Madison
Kreutzer, A. L.	Wausau
La Follette, Robt. M.	Madison
Loeffel, W. L.	for Barnett Bros., Chicago, Ill.
Loop, A. I.	North East, Penn.
Loope, Dr. T. E.	Eureka
Ma'de, O. G.	Madison
Marshall, S. H.	Charlottesville, Va.
Menn, J. J.	Norwalk
McGregor, E. L.	Appleton
Naffz, Henry E.	Sauk City
Orr, E. D.	Mt. Hope
Peck, Chas. G.	Sheboygan Falls
Raymer, Geo.	Madison
Rentschler, F.	Madison
Richardson, E. A.	Sparta
Riordan, D. E.	Ashland
Rosenow, H. E.	Oconomowoc
Ruste, C. O.	Blue Mounds
Ryerson, M. A.	Lake Geneva
Salter, Walter N.	Westboro
Saxe, Arthur	Whitewater
Seubert, John	Cologne, Minn.
Simon, H.	Baraboo
Simonson, Andrew	Racine
Smith, Geo. B.	Green Bay
Smith, Irving	Green Bay
Smith, S'tas S.	Crandon
Steele, W. H.	Pewaukee

Taylor, Will. L.	Mt. Hope
Tift, Geo. L.	Milwaukee
Tilson, Mrs. Ida E.	West Salem
Toole, Wm.	Baraboo
Toole, W. A.	Baraboo
Treleven, Jos. D.	Omro
Underwood, J. M.	Lake City, Minn.
Underwood, Roy	Lake City, Minn.
Vaughn, B.	Grand Rapids
Webb, W. H.	Superior
Williams, Daniel	Oconomowoc
Wright, Arthur	Milwaukee

Honorary Life Members.

Prof. L. H. Bailey	Ithaca, N. Y.
F. W. Case	Chicago, Ill.
M. E. Hinkley	Mt. Vernon, Iowa
C. G. Patten	Charles City, Iowa
Jonathan Periam	Chicago, Ill.
F. H. Phoenix	Delavan, Wis.
A. J. Phillips,	West Salem, Wis.
Prof. Wm. Trelease	St. Louis, Mo.

Annual Honorary Members.

A. W. Bryant	Princeton, Ill.
Miss Aletta F. Dean	Madison, Wis.
Prof. S. W. Fletcher	Agricultural College, Mich.
Prof. S. B. Green.....	St. Anthony Park, Minn.
J. B. Graves	Neosho, Mo.
E. M. Griffiths	Madison
Prof. N. E. Hansen	Brookings, S. D.
John A. Howard	Hammond, Minn.
Edward Hutchins	Fennville, Mich.
R. K. Lemon	Mitchellville, Iowa
Hon. E. G. Marriott	Baraboo
William McFetridge	Baraboo
Prof. A. B. Stout	Baraboo
C. H. True	Edgewood, Iowa
J. H. Turner	Hebron, Ill.

ANNUAL MEMBERS.

Adams, W. H.	Eagle River
Adamson, Mrs. C. F.	Madison
Agern, John	Lake Geneva
Allen, James	Wausau
Alexander, J. W.	Mt. Hope
Anderson, J. P.	Ashland
Aznoe, John	Detroit Harbor
Baensch, Emil	Manitowoc
Baker, H. J.	Fond du Lac
Baldwin, Herbert	Mountain
Balsden, James	Lake Geneva
Barlow, Geo.	Lake Geneva
Barrett, James	Lake Geneva
Barrett, Miles	Lake Geneva
Barry, C. H.	Lake Geneva
Bartlett, H. V.	Chippewa Falls
Bathrick, D. D.	Chicago, Ill.
Bauer, Carl	Cedarburg
Beach, Prof. S. A.	Ames, Iowa
Beebe, A. G.	Bruce
Beerend, Dr. C.	Wauwatosa
Below, H. F.	Marshfield
Bennett, A. E.	Grand Rapids
Bennett, Wm. F.	Norwood Park, Ill.
Bennett, A. C.	Grand Rapids
Best, Wm.	Lake Geneva
Bingham, D. E.	Sturgeon Bay
Bodenstein, F.	Madison
Bonns, W. W.	Geneva, N. Y.
Bowman, Dr. F. F.	Madison
Bradt, H. H. G.	Eureka
Braemer, Herman L.	Woodland
Brainerd, C. P.	Boscobel
Brandenburg, O. D.	Madison
Bredael, Joseph	Green Bay
Brett, Dr. B. C.	Green Bay
Briggs, Newton	Madison
Brigham, Chas. I.	Blue Mounds
Brown, A. D.	Baraboo
Brown, A. D.	Poplar

MEMBERSHIP ROLL.

ix

Brown, F. M.	Madison
Brown, Preston	Madison
Brown, C. L.	Wauwatosa
Buehler, J. G.	Twin Bluffs
Burdick, C. G.	Antigo
Buntrack, Theo. T.	Embarrass
Burdon, Rowland T.	Green Bay
Burnham, O. J.	Richland Center
Burrows, Geo.	Madison
Burton, Warren E.	Lake Geneva
Button, A. A.	Milwaukee
Button, Frank	Lake Geneva
Cantwell, F. W.	Madison
Carey, C. H.	Vans Harbor, Mich.
Carpenter, Mary H.	Madison
Children, A. G.	Kenosha
Christensen, H. C.	Oshkosh
Christensen, H. E.	Milltown
Christensen, F.	Manitowoc
Christensen, Nells	Lake Geneva
Church, Geo. S.	Allenville
Cleermans, Aug.	Green Bay
Conover, F. K.	Madison
Cooke, W. D.	Green Bay
Cooley, C. F.	Madison
Cooper, Hiram	Clinton
Cooper, H. O.	Montello
Cramer, S. F.	Merrimac
Crawford, M.	Shiocton
Curtis, George Jr.	Madison
Dale, C. H.	Madison
Dale, Jacob	Lake Geneva
Daub, C. H.	Green Bay
De Clerc, Chas.	Green Bay
De Guire, Geo.	Iron River
Deiwicke, Ed.	Iron River
Dey, Scott S.	Wycocena
Dickenson, H. M.	Lake Geneva
Diley, J. F.	Rush Lake
Doherty, E. G.	Maple
Doherty, Mrs. Sadie	Poplar
Doty, E. P.	Janesville
Downey, W. J.	Whitewater

Drake, F. B.	Madison
Dunning, E. E.	Milwaukee
Edwards, J. T.	Medford
Edwards, A. J.	Ft. Atkinson
Elliott, Charles	Lake Geneva
Emery, L. J.	Milwaukee
Emmerton, Thomas	Bloomer
Everett, Dr. E.	Madison
Fargo, Robt.	Lake Mills
Fegie, John	Bayfield
Ferguson, T. J.	Wauwatosa
Fleming, Frank	Lake Geneva
Fleming, Chas.	Lake Geneva
Freeman, Michael	Racine
Fridd, John	Eureka
Gabriel, H.	New Glarus
Ganchow, W. C.	Bonduel
Giles, Peter	Milwaukee
Gilley, Albert	Stoughton
Goodrich, R. O.	Ripon
Green, Reuben	Ft. Atkinson
Grieling, L.	Green Bay
Hahn, H. J.	Sturgeon Bay
Hartwell, W. L.	Plover
Harper, C. L.	Madison
Harper, Dr. C. A.	Madison
Harper, Blanchard	Madison
Harris, S. L.	Medford
Harris, H. H.	Warrens
Hatch, C. A.	Richland Center
Hatch, L. M.	Chapin, Iowa
Hatch, A. L.	Sturgeon Bay
Henry, Prof. W. A.	Madison
Henry, M. E.	Oshkosh
Higgins, H. M.	Lake Geneva
Hildeman, E. S.	Belleplain
Hillier, B. S.	Madison
Hodge, W. A.	Waunakee
Hoeffs, Aug.	Shawano
Hollister, A. H.	Madison
Hopson, E. D.	Madison
Howie, John	Waunakee
Hurry, Wm.	Lake Geneva

Ihrig, J. J.	Oshkosh
Illenberger, W. H.	Lake Geneva
Irwin, R. A.	Lancaster
Isaacson, Chas.	Poplar
Isom, R. A.	Madison
Jackson, Mrs. J. A.	Madison
Jackson, Chas.	Ft. Atkinson
Jacobs, A. F.	Coloma Sta.
James, P. T.	Bloom City
Jeffrey, Geo. J.	Milwaukee
Jewett, A. J.	Sparta
Johns, Prof. R. B.	Wausau
Johnson, Geo. J.	Delavan
Johnson, P. W.	Westboro
Johnson, Axel.	Lake Geneva
Jones, Geo. J.	Neenah
Kampen, H. W.	Poynette
Kauffman, H.	Marshfield
Kelley, A. N.	Mineral Point
Keilogg, Mrs. Helen N.	Janesville
Kesl, Vaclav.	Cadott
Ketchum, I. P.	Madison
Kidd, Z.	Bloom City
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Klauber, M. S.	Madison
Klosowski, Rev. M.	Plover
Kney, Mrs. Clara.	Madison
Knispel, Barney, J.	Watertown
Kolar, Frank J.	Muscoda
Krienetz, Alfred J.	Milwaukee
Kruege, H. F.	Kenosha
Kruschke, J. W.	Cranberry Center
Kuehne, Frank.	Lake Geneva
Kuil, Andrew.	Lake Geneva
Lamp, Robt.	Madison
Lanktree, W. H.	Ashland
Larkin, Danforth.	Madison
Larratt, Wm.	Lake Geneva
Larsen, Hans.	Lake Geneva
Laue, A. F.	Milwaukee
Lawrence, W. I.	Sturgeon Bay
Lawrence, W. H.	Lake Geneva
Lee, Carl E.	Mason

Lenicheck, F. J.	Milwaukee
Leverich, J. W.	Sparta
Loewe, Arthur P.	Milwaukee
Long, Henry	Lake Geneva
Longland, Wm.	Lake Geneva
Loope, Eva	Eureka
Mack, S. B.	Monroe
Madison, Chris	Lake Geneva
Mason, E. L.	Hillsboro
Marken, Otis	Valders
Martin, Walter	Oshkosh
Marsh, Thomas	Waunakee
Marsh, H. F.	Antigo
Marshall, W. S.	Madison
Marshall, R. R.	Madison
Meixner, J. W.	De Forest
Melcher, Henry	Oconomowoc
Melville, James W.	Chippewa Falls
Melville, John	Green Bay
Meyer, A. J.	Racine
Millar, Fred	Lake Geneva
Mills, Genevieve	Madison
Milward, J. G.	Madison
Mische, E. T.	Madison
Mitchell, James	Lake Geneva
Moore, Wm.	Delavan
Moore, J. G.	Madison
Morefield, Clarence	Lake Geneva
Montgomery, L. E.	Reedsburg
Moseley, J. E.	Madison
Moyle, W. J.	Union Grove
Moyle, Miss M. A.	Union Grove
Muehleisen, G.	Tell
Mueller, William E.	De Forest
Muhlenkamp, Fred	Sparta
Muller, Miss E. T.	Waukesha
Myers, Albert	Lake Geneva
McCarthy, Wm.	Albion
McConnell, T. F., Jr.	Ripon
McKay, John M.	Pardeeville
McKay, W. G.	Pardeeville
McLay, Geo. R.	Janesville
Nelson, J. C.	Green Bay

Nero, William	Cedarburg
Nielson, Alex.	Lake Geneva
Niles, Theo. N.	Monroe
Nills, Raymond	Lake Geneva
Nourse, H.	Bayfield
Oakley, Mary	Madison
Obrion, Ellsworth	Auburndale
Ohlenschlager, Walter	Oconomowoc
Oleson, Janes P.	Ripon
Olin, J. M.	Madison
Otis, B. F.	Sturgeon Bay
Ovenden, Frank	Madison
Paige, Mrs. W. S.	Madison
Palmer, J. S.	Baraboo
Palmer, L. H.	Baraboo
Parshall, Harry	Lake Geneva
Patterson, A. C.	Janesville
Park, W. J.	Madison
Pearson, N. P.	Lake Geneva
Pearson, C. L.	Baraboo
Pederson, C. T.	Prairie Farm
Pelton, Geo.	Reedsburg
Peterson, P. A.	Poplar
Perry, Howard E.	Black River Falls
Pfefferle, S.	Appleton
Pfefferle, John	Valders
Pfeiffer, A. F.	West Bend
Philipson, C.	Oshkosh
Planta, R. F.	Oak Park, Ill.
Post, Lewis	Madison
Post, Lawrence	Mt. Horeb
Potter, A. T.	La Farge
Proudfit, A. E.	Madison
Quinn, Michael	Lake Geneva
Ramsey, Mrs. Robt.	Baraboo
Rastall, Benj.	Viola
Ray, Joseph	Madison
Read, Geo. A.	Lake Geneva
Reek, Joseph	Neenah
Reeve, Dr. J. E.	Appleton
Reinen, C. C.	Sun Prairie
Reis, John	Ithaca
Reis, Albert	Ithaca

Reinecke, H. M.	Green Bay
Rentschler, Geo.	Madison
Reupke, Albert	Lake Geneva
Richardson, C. L.	Chippewa Falls
Riegle, G. W.	Madison
Riester, E.	Chippewa Falls
Riley, Jas.	Bloom City
Roe, J. W.	Oshkosh
Rosenow, Arthur	Oconomowoc
Ryan, Sam J.	Appleton
Sampson, Robert	Lake Geneva
Sandgren, Ed.	Lake Geneva
Sandsten, Prof. E. P.	Madison
Sandegard, Chris	Lake Geneva
Sansum, David	Baraboo
Scheutte, Aug.	Manitowoc
Schilt, Peter	Lake Forest, Ill.
Schuck, John B.	Milwaukee
Shepard, Geo.	Lake Geneva
Shimp, E. R.	Delmont, S. D.
Short, Benj.	Lake Geneva
Sidney, J. A.	Poplar
Simonson, L. A.	Washburn
Sinclair, R. O.	Ladysmith
Skewes, E. B.	Union Grove
Skinner, Mrs. Lloyd	Madison
Skinner, Prof. E. B.	Madison
Slaby, Edw. G.	Madison
Smith, B. H.	Tiffany
Smith, Mrs. J. Q.	Madison
Smith, A. J.	Lake Geneva
Smith, S. L.	Oshkosh
Soblie, Jos.	Lake Geneva
Sperbeck, M. V.	Oshkosh
Sprague, Theo.	Eagle River
Spry, John	Ft. Atkinson
Stark, Frank	Randolph
Steensland, Halle	Madison
Stephens, Jas. W.	Fond du Lac
Stiehl, Clarence J.	Black River Falls
Stone, Mrs. Fannie	Racine
Stout, C. F.	Westboro
Straka, Edw. E.	Kellnersville
Straka, Anton	Whitelaw

Sumner, Ed.	Madison
Swartz, John F.	Kenosha
Teckemeyer, Ed.	Madison
Telfer, Joe	Ft. Atkinson
Ten Eyck, A. A.	Brodhead
Tenney, H. A.	Madison
Thwaites, Mrs. R. G.	Madison
Tiefenthaler, G. E.	Milwaukee
Tice, Jess	Waukau
Timms, C. J.	Ripon
Tiplady, Walter	Lake Geneva
Tiplady, John	Lake Geneva
Tittmore, J. N.	Oshkosh
Tobey, P. J.	Corliss
Tolman, Henry	Lake Geneva
Tomkins, W. M.	Ashland
Toole, Eben	Baraboo
Topolinski, John	Lake Geneva
Torgersen, Theo.	Coon Valley
Towne, Wm.	Lake Geneva
Trettin, A. H.	Milwaukee
Trowbridge, Geo.	Lake Geneva
Tuttle, H. B.	Valley Junction
Turtle, Henry	Lake Geneva
Turnquist, August	Bayfield
Turville, Thomas	Madison
Tuve, S. O.	Fergus Falls, Minn.
Ulbricht, Edgar A.	Milwaukee
Umlauf, Rudolph	Dorchester
Urdike, Rev. E. G.	Madison
Utter, Delbert	Lake Beulah
Van Loon, John	La Crosse
Vivian, Fred	Mineral Point
Wallstedt, Wm.	Lake Geneva
Wayne, Joseph	Boscobel
Whittlesey, S. N.	Cranmoor
Wilder, A. P.	Hong Kong, China
Wilkins, A. P.	Delavan
Wilkinson, Alonzo	Bayfield
Williamson, W. D.	Madison
Winding, A.	Milwaukee
Wright, Mrs. A. O.	Madison
Young, A. W.	Chippewa Falls

SHORT COURSE STUDENTS, COLLEGE OF AGRICULTURE.
UNIVERSITY OF WISCONSIN.

Anthony, David	Oregon
Ahlers, Walter	Grafton
Anderson, Milo C.	Greenwood
Basse, Herman	Peebles
Bennett, J. H.	Mineral Point
Bradley, Frank	Somers
Bohl, Joseph	Beaver Dam
Boll, J. C.	Rosendale, Wis.
Booth, Guy	Cuba City
Burger, John H.	Rosendale, Wis.
Coldwell, John	Blue Mounds
Cherveney, Wenzel	Kewaunee
Cook, Carl	Independence, Wis.
Callicutt, Harry	Mineral Point
Dennerlein, Arthur J.	Plymouth
Dunbar, Harold F.	River Falls
Erickson, Louis E.	Kewaunee
Empey, George	Dorchester
Fisher, Clarence J.	Omro
Frederickson, Fred	Spring Green
Le Gresley, Norris	Hillside, Wis.
Gallagher, Frank	Reedsburg, Wis.
Hansen, Ole C.	Mineral Point
Hansen, Hans	Lake Mills, Wis.
Haman, Edgar	Sheboygan
Hirsch, B.	Washburn
Holloway, John W.	Union Grove
Jacky, Gilbert	Ma'one
Jacot, Oscar	Eleva
James, Will	Montfort, Wis.
Jante, Henry H.	Milwaukee
Jelle, Norman	Mt. Horeb
Jones, Charles Lloyd	Hillside
Jones, Owen	Beaver Dam
Jungbluth, William J.	Milwaukee, Wis.
Johnson, George	Cataract, Wis.
Kircher, H. W.	Chilton
Klofanda, Reuben	Racine
Knoke, E. O.	Shiocton, Wis.

Kruse, Wm.	Whitewater
Kurtze, Otto C.	West Allis
Leonard, Mike	Plymouth, Wis.
Lewerenz, Roy B.	Tomahawk, Wis.
Mang, Arthur	Ripon
Merwin, Ernest L.	Walworth
Michels, Henry	Malone
Moore, Harry	McFarland
Nelson, Martin	Milton
Nicholls, Harry G.	Stoughton
Nyre, Lawrence	Gilmantown
Patterson, J. M.	Chicago
Peck, Sidney	Oconomowoc
Pederson, Peter	Elva, Wis.
Port, Mike	Grafton
Peterson, Arne	Bristol
Peterka, Joseph	Racine
Peik, Edmund	Chilton
Peilk, Arthur	Picatonica, Ill.
Phillips, Arthur John	Stoughton
Rundell, Joseph	Livingstone
Rundell, W. M.	Livingstone
Schultz, Walter	Neillsville
Schultz, Edwin W.	Brownsville
Schroeder, Herman	Milwaukee
Sievers, George N.	Milwaukee
Strowig, Wm.	Cleveland
Spaulding, Leslie	Mondovi
Tice, Ray	Redgranite
Tichenor, M. H., Jr.	Oconomowoc
Thompson, Adolph	Black River Falls, Wis.
Thulin, Edwin	Hayward
Usher, Earl S.	South Wayne, Wis.
Vaughn, Dayle W.	Whitewater
Vosberg, Bernard	Lyons, Iowa
Vosberg, Henry L.	Louisberg, Wis.
Wichern, Carl W.	Edgerton, Wis.
Wilhelmsen, H. B.	Ixonia
Winge, Wm.	Wild Rose
Wyatt, Ray	Tomah

OFFICERS AND COMMITTEES FOR 1907

President, R. J. Coe.....	Ft. Atkinson
Vice-President, W. H. Hanchett.....	Sparta
Treasurer, L. G. Kellogg.....	Ripon
Secretary, F. Cranefield.....	Madison

EXECUTIVE COMMITTEE.

R. J. Coe, Chairman.....	Ex-Officio
W. H. Hanchett.....	Ex-Officio
L. G. Kellogg.....	Ex-Officio
F. Cranefield.....	Ex-Officio
1st Dist., William Longland.....	Lake Geneva
2nd Dist., Prof. E. P. Sandsten.....	Madison
3rd Dist., William Toole.....	Baraboo
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5th Dist., Henry Melcher.....	Oconomowoc
6th Dist., L. A. Carpenter.....	Fond du Lac
7th Dist., A. J. Phillips.....	West Salem
8th Dist., M. E. Henry.....	Oshkosh
9th Dist., D. E. Bingham.....	Sturgeon Bay
10th Dist., A. E. Bennett.....	Grand Rapids
11th Dist., C. L. Richardson.....	Chippewa Falls

COMMITTEE ON FINANCE.

Irving C. Smith, Chairman.....	Green Bay
C. L. Richardson.....	Chippewa Falls
Henry Melcher.....	Oconomowoc

COMMITTEE ON TRIAL ORCHARDS.

D. E. Bingham, term expires.....	Feb. 1910
R. J. Coe, term expires.....	Feb. 1909
W. J. Moyle, term expires.....	Feb. 1908

COMMITTEE ON CO-OPERATIVE FRUIT MARKETING.

W. H. Hanchett, D. E. Bingham, C. L. Pearson.

TRIAL ORCHARDS.

Wausau, Marathon County, 10 acres.....	Established 1897
Medford, Taylor County, 3 acres.....	Established 1903
Poplar, Douglas County, 10 acres.....	Established 1904
Barron, Barron County, 5 acres.....	Established 1906
Maple, Douglas County, 3 acres.....	Established 1906

LISTS OF FRUITS RECOMMENDED FOR CULTURE IN WISCONSIN

The behavior of varieties of fruits is influenced very largely by environment. The conditions of soil, exposure and latitude over such an area as the state of Wisconsin vary greatly and no list can be given that will prove satisfactory in all localities. The following provisional lists were prepared by the Trial Orchard Committee. Hardiness of plant and fruit bud has been the leading thought in the selection of varieties.

APPLES (General List).

Alexander, Astrachan (Red), Dominion, Dudley, Fall Orange, Fameuse (Snow), Golden Russett, Hibernial, Lowland Raspberry, Longfield, Lubsk Queen, McIntosh, Malinda, McMahan, Newell, Northwestern Greening, Oldenburg (Duchess), Patten Greening, Perry Russett, Plumb Cider, Scott, Tetofski, Tolman (Sweet), Utter, Wealthy, Westfield (Seek-no-Further), Windsor, Wolf River, Yellow Transparent.

APPLES (Lake Shore List).

In addition to the above many other varieties including the following may be successfully grown in the counties bordering on Lake Michigan. Baldwin, Eureka, Fallawater, Gano, King, Northern Spy, Pewaukee, Willow Twig, York Imperial, Bellflower.

APPLES (Commercial Orchard List).

It is generally conceded that a commercial orchard should consist of but few varieties; the following are suggested. Dudley, Fameuse, Lonfield, McMahan, McIntosh, Northwestern Greening, Oldenburg, Scott, Utter, Wealthy, Yellow Transparent.

APPLES (Five Varieties for Farm Orchard).

Northwestern Greening, Oldenburg (Duchess), Tolman (Sweet), Wealthy, Yellow Transparent.

APPLES (For Trial).

These are all promising varieties but have not been extensively grown in any part of the state. Gem City, Hanko, Lily, Wendorff, Zettle Bellflower.

CRABS.

Hyslop, Lyman, Martha, Sweet Russett, Transcendent, Whitney.

PLUMS.

Of the classes commonly cultivated, viz. European, Japanese and Native or American, the last named is the most reliable.

NATIVE PLUMS.

De Soto, Forest Garden, Hammer, Hawkeye, Ocheeda, Quaker, Rockford, Surprise, Wyant.

EUROPEAN PLUMS (not recommended except along Lake Shore).

Lombard, Green Gage, Moore's Arctic.

JAPANESE PLUMS (not recommended except along Lake Shore).

Abundance, Burbank.

CHERRIES.

Early Richmond, Montmorency.

GRAPES.

Brighton, Campbell's Early, Concord, Delaware, Diamond, Green Mountain, Moore's Early, Worden.

BLACKBERRIES.

Badger, Briton (Ancient), Eldorado, Snyder.

STRAWBERRIES.

Varieties starred have imperfect flowers and must not be planted alone.

Bederwood, *Crescent, Clyde, Dunlap, Enhance, Gandy, Glen Mary, *Haverland, Lovett, *Sample, Splendid, *Warfield.

TWO VARIETIES STRAWBERRIES FOR FARM GARDEN.

Dunlap, *Warfield.

RASPBERRIES.

Black: Conrath, Cumberland, Gregg, Older.

Red: Cuthbert, Loudon, Marlboro.

Purple: Columbian.

CURRANTS.

Red: Red Dutch, Long Bunch Holland, Victoria.

White: White Grape.

Black: Lee's Prolific, Nap'es.

GOOSEBERRIES.

Downing.

PEARS.

On account of the prevalence of blight and winter killing, pears are not generally recommended for Wisconsin. Good crops are occasionally produced under favorable conditions, especially in the southeastern part of the state. The following list includes both early and late varieties. List prepared by W. J. Moyle.

Bartlett, C'app Favorite, Early Bergamont, Flemish Beauty, Idaho, Kieffer, Lawson, Seckel, Sheldon, Vermont Beauty.

TREES AND SHRUBS RECOMMENDED

EVERGREENS.

For screens and windbreaks—Norway Spruce, White Spruce, White Pine.

For hedges and screens for shearing—Norway Spruce, American Arbor Vitae, Red Cedar.

For lawns—Norway Spruce for backgrounds. For groups—American Arbor Vitae, Red Cedar, White Spruce, Colorado Blue Spruce.

For small lawns—Arbor Vitae, Savin Juniper, Mugho Pine.

DECIDUOUS TREES.

The more desirable ones are starred, and a further selection of five is indicated by double stars:

**American Elm, Box Elder, Black Cherry, Carolina Poplar, **Green Ash, *Hackberry, Honey Locust, Larch, **Linden, **Norway Maple, *Scarlet Maple, **Silver Maple, *Sugar Maple, Scarlet Oak, *White Oak, White Ash.

DECIDUOUS ORNAMENTAL TREES.

This class includes smaller deciduous trees of more value for ornament than for shade or defense.

Cut-leaved Weeping Birch, Tartarian Maple, Ginnala Maple, Kentucky Coffee Tree, Mountain Ash, Weeping Willow, Russian Mulberry.

LIST OF SHRUBS RECOMMENDED.*

<i>Scientific Name.</i>	<i>Common Name.</i>
<i>Berberis vulgaris</i>	Common Barberry
<i>Berberis vulgaris var. atropurpurea</i>	Purple-leaved Barberry

* From Bulletin 108, Wisconsin Experiment Station, by F. Cranefield.

<i>Berberis Thunbergii</i>	Thunberg's Barberry
<i>Corylus maxima</i> var. <i>purpurca</i>	Purple Filbert
<i>Diervilla florida</i>	Weigela (rose)
<i>Diervilla candida</i>	Weigela (white)
<i>Diervilla hybrida</i>	Weigela (Eva Rathke)
<i>Diervilla hybrida</i> var. <i>Desboisii</i>	Desbois's Weigela
<i>Eleagnus argentea</i>	Silver Berry
<i>Euonymus Europaeus</i>	Strawberry Tree
<i>Hibiscus Syriacus</i>	Althea
<i>Hippophae rhamnoides</i>	Sea Buckthorn
<i>Hydrangea paniculata</i> gr.	Garden Hydrangea
<i>Lonicera Ruprechtiana</i>	Ruprecht's Honeysuckle
<i>Lonicera Tartarica</i>	Tartarian Honeysuckle
<i>Morus Alba</i> var.	Tea's Weeping Mulberry
<i>Philadelphus coronarius</i>	Mock Orange
<i>Philadelphus coronarius</i> var. <i>aurea</i>	Golden Mock Orange
<i>Philadelphus inodorus</i>	Mock Orange, large fl.
<i>Potentilla fruticosa</i>	Shrubby Clinque Foil
<i>Prunus nana</i>	Russian Almond
<i>Rhodotypos kerrioides</i>	Rhodotypos
<i>Rhus Cotinus</i>	Smoke Bush
<i>Ribes aureum</i>	Missouri Flowering Currant
<i>Robinia hispida</i>	Rose Acacia
<i>Rosa rugosa</i>	Japanese Rose
<i>Sambucus nigra</i> var. <i>aurea</i>	Golden Elder
<i>Spiraea Bumalda</i>	Bumalda Spiraea
<i>Spiraea Bumalda</i> var.	Anthony Waterer Spiraea
<i>Spiraea Billardii</i>	Billard's Spiraea
<i>Spiraea Douglasi</i>	Douglas' Spiraea
<i>Spiraea Japonica</i>	Japanese Spiraea
<i>Spiraea salicifolia</i>	Meadow Sweet Spiraea
<i>Spiraea Van Houtte</i>	Van Houten's Spiraea
<i>Syringa Persica</i>	Persian Lilac
<i>Syringa villosa</i>	Chinese Lilac
<i>Syringa vulgaris</i>	Common Lilac
<i>Tamarix Pallassii</i> Desv. (<i>Tamarix Amurense</i> Hort.) ..	Amur Tamarix
<i>Viburnum Opulus</i> vr. <i>sterile</i>	Snowball

ROSES.

Hardy garden—Harrison Yellow, Persian Yellow, Madame Plantier.

Twelve varieties hybrid perpetual—Paul Neyron, Mrs. J. H. Laing, Gen. Jacqueminot, Dinsmore, Marshall P. Wilder, Coquettes des

Blanches. Earl of Dufferin, Jules de Margottin, Vick's Caprice, Magna Charta, Prince Camille de Rohan, General Washington.

Moss roses—Perpetual White, Salet, Paul Fontine, Henry Martin.

Climbers—Prairie Queen, Russel's Cottage, Seven Sisters, Gem of the Prairies, Crimson Rambler.

COMPARATIVE HEIGHT AT MATURITY OF DIFFERENT SHRUBS.

The height at maturity of the different species must be considered when planting in groups or borders. This will depend so much upon their environment that it is difficult to give the height in feet that any species may be expected to attain. When different kinds are planted under like conditions it may be assumed that relative heights will be maintained. The following may serve as a partial guide in planting:

Tall 10 to 15 Feet.

Barberry (Common)
Lilac, Common
Barberry (Purple-leaved)
Lilac, Japanese
Golden Elder
Lilac, Jossika's
Honeysuckle, Fly
Mock Orange
Honeysuckle, Slender
Sea Buckthorn
Honeysuckle, Tartarian
Siberian pea tree (tall)
Honeysuckle, Tartarian white

Medium—6 to 10 Feet.

Crandall Currant
Silver Berry
Honeysuckle, Blue
Strawberry Tree
Japanese Rose
Spiraea, Billiards
Lilac, Chinese
Spiraea, Douglas
Purple Filbert
Spiraea, Three-lobed
Rose Acacia

Spiraea, Van Houten's
 Russian Almond
 Weeping Mulberry
 Siberian Pea tree (dwarf)
 Wiegela

Dwarf—2 to 6 Feet.

Althea
 Spiraea, Anthony Waterer
 Barberry, Thunberg's
 Spiraea, Ash-leaved (Sorbaria)
 Cinque Foil
 Spiraea, Bumalda
 Honeysuckle, Albert's
 Spiraea, Japanese
 Hydrangea
 Spiraea, Meadow Sweet
 Rhodotypos
 Spiraea, Plum-leaved

A LIST OF NATIVE SHRUBS DESIRABLE FOR PLANTING ON
 HOME GROUNDS.

<i>Scientific Name.</i>	<i>Common Name.</i>
<i>Arctostaphylos Uva-ursi</i>	Bearberry
<i>Ceanothus Americanus</i>	New Jersey Tea
<i>Cephalanthus occidentalis</i>	Button Bush
<i>Cimaphila umbellata</i>	Prince's Pine
<i>Comptonia aspleniflora</i>	Round-leaved Dogwood
<i>Cornus stolonifera</i>	Red Osier Dogwood
<i>Dirca palustris</i>	Leatherwood (Wickopy)
<i>Epigaea repens</i>	Trailing Arbutus
<i>Euonymus atropurpureus</i>	Wahoo
<i>Hypericum pyramidatum</i>	St. John's Wort
<i>Ilex verticillata</i>	Winterberry (Holly)
<i>Juniperus procumbens</i>	Trailing Juniper
<i>Myrica Gale</i>	Sweet Gale
<i>Physocarpus opulifolia</i>	Ninebark
<i>Rhamnus catharticus</i>	Buckthorn
<i>Rhus typhina</i>	Staghorn Sumac
<i>Rhus glabra</i>	Smooth Sumac
<i>Rhus copallina</i>	Dwarf Sumac
<i>Ribes rubrum</i>	Wild Rose Currant

<i>Ribes floridum</i>	Wild Black Currant
<i>Rosa lucida</i>	Wild Rose (tall)
<i>Rosa blanda</i>	Wild Rose (dwarf)
<i>Rubus odoratus</i>	Purple-flowered Raspberry
<i>Rubus Nutkanus</i>	White-flowered Raspberry
<i>Sambucus Canadensis</i>	Common Elder
<i>Sambucus pubens</i>	Scarlet Elder
<i>Shepherdia Canadensis</i>	Shepherdia
<i>Symphoricarpus racemosus</i>	Snowberry
<i>Symphoricarpus vulgaris</i>	Coral Berry
<i>Taxus baccata</i>	Ground Hemlock
<i>Viburnum lentago</i>	Sheepberry
<i>Viburnum dentatum</i>	Black Haw
<i>Viburnum acerifolium</i>	_____
<i>Viburnum opulus</i>	Bush Cranberry
<i>Zantoxylum Americanum</i>	Prickly Ash

SIX SHRUBS FOR HOME GROUNDS.

The following are all reliably hardy in any part of the State.

Common Lilac, Tartarian Honeysuckle, Rosa Rugosa, Mock Orange or Syringa, Van Houten's Spiraea, Common Barberry.

THREE PERENNIAL VINES.

Ampelopsis or American Ivy, (native in Southern Wisconsin). Wild Grape, Trumpet Honeysuckle.

BLACK LIST

A LIST OF SHRUBS ALL OF WHICH HAVE BEEN TESTED ON
THE GROUNDS OF THE EXPERIMENT STATION AT MADI-
SON AND FOUND UNSATISFACTORY.

<i>Scientific Name.</i>	<i>Common Name.</i>
<i>Azalea arborescens</i>	Rhododendron
<i>Azalea viscosa</i>	Rhododendron
<i>Azalea nudiflora</i>	Azalea
<i>Azalea mollis</i>	Azalea
<i>Calycanthus floridus</i>	Sweet-scented shrub
<i>Caryopteris Mastacanthus</i>	Blue Spiraea
<i>Chionanthus Virginica</i>	White Fringe
<i>Clethra alnifolia</i>	Sweet Pepperbush
<i>Colutea arborescens</i>	Bladder Senna
<i>Cornus florida</i>	Flowering Dogwood
<i>Cydonia Japonica</i>	Japanese Quince
<i>Daphne Cneorum</i>	Daphne
<i>Daphne Mezereum</i>	Daphne
<i>Deutzia gracilis</i>	Slender Deutzia
<i>Eleagnus longipes</i>	Goumi
<i>Exochorda grandiflora</i>	Pearl Bush
<i>Forsythia suspensa</i>	Golden Bell
<i>Halesia tetraptera</i>	Snowdrop tree
<i>Itea Virginica</i>	Virginian Willow
<i>Kerria Japonica</i>	Kerria
<i>Ligustrum vulgare</i>	Common privet
<i>Paulownia imperialis</i>	Paulownia
<i>Prunus cerasifera</i> var. (<i>Prunus pissardi Hort.</i>) ..	Purple-leaved Plum
<i>Prunus Japonica</i>	Flowering Almond
<i>Prunus triloba</i>	Flowering plum (double)
<i>Spiraea Arguta</i>	Arguta Spiraea
<i>Spiraea Thunbergii</i>	Thunberg's Spiraea

The plants of certain of the above named varieties made a good growth each year but have not blossomed unless given thorough winter

protection. In this class are Bladder Senna, Flowering Almond, Flowering Plum and Golden Bell.

The Japanese Quince is hardy of bush but has not borne flowers except when given winter protection. The Goumi will only bear fruit when protected in winter. The double-flowered Almond will blossom freely if given thorough winter protection, otherwise it will kill back severely. The double-flowered Plum grows well and after a mild winter will bear flowers in advance of the leaves; unreliable, however, four years out of five if unprotected.

The others of this list have either died outright or else barely survived.

BUSINESS CARDS OF MEMBERS

- Adams, W. H., Eag'e River, small fruits.
Barnes, A. D., Waupaca, nursery and fruit farm.
Bingham, D. E., Sturgeon Bay, nursery and fruit farm.
Brown, A. D., Baraboo, nursery.
Buehler, J. G., Twin Bluffs, fruit farm.
Bennett, A. E., Grand Rapids, cranberries.
Barnett Bros., Chicago, Ill., commission merchants.
Chappel, F. H., Oregon, nursery.
Coe, Converse & Edwards, Ft. Atkinson, nursery.
Downing, M. B., Milton, nursery.
Daub, C. H., Eau Claire, small fruits.
Fancher, W. E., Corliss, nursery
Ferguson, T. J., Wauwatosa, nursery.
Foley, M. F., Baraboo, nursery.
Hager, W. S., West Depere, small fruits.
Hanchett, Wm., Sparta, small fruits.
Hatch, A. L., Sturgeon Bay, nursery and fruit farm.
Hatch, C. A., Richland Center, fruit farm.
Johnson, Franklin, Baraboo, small fruits.
Jeffrey, Geo. J., Milwaukee, small fruits and orchard.
Jewett, A. P., Sparta, nursery.
Kelley, A. N., Mineral Point, fruit farm.
Kellogg, L. G., Ripon, nursery and small fruits.
Kellogg, Geo. J. & Sons, Janesville, nursery and fruit farm.
Leverich, J. W., Sparta, small fruits and plants.
Loope, T. E., Eureka, nursery and fruit farm.
Mack, S. B., & Co., Monroe, nursery.
McKay Bros., Pardeeville, nursery.
Moyle, W. J., Union Grove, nursery.
Manitowoc Seed Co., Manitowoc, seeds.
Palmer, L. H., Baraboo, small fruits.
Pearson, C. L., Baraboo, small fruits and plants.
Post, Lewis, Madison, small fruits.

- Philips, A. J., West Salem, nursery and fruit farm.
Ray, Joseph, Madison, small fruits.
Ramsey, Robt., Baraboo, fruit farm.
Reis, John, Ithaca, fruit farm and nursery.
Richardson, C. L., Chippewa Falls, small fruits.
Rentschler, F., Madison, greenhouse.
Rentschler, Geo, Madison, greenhouse and nursery.
Roe, J. W., Oshkosh, fruit farm.
Smith Bros., Green Bay, market garden and small fruits.
Sperbeck, M. V., Oshkosh, market garden and fruit farm.
Sansum, David, Baraboo, market garden.
Spry, John, Ft. Atkinson, small fruits.
Simon, H., Baraboo, fruit farm.
Stark, Frank. Randolph, fruit farm.
Tamblingson & Son, Ft. Atkinson, nursery.
Toole, Wm., Baraboo, pansy specialist.
Toole Bros., Baraboo, seed corn.
Underwood, J. M., Lake City, Minn., nursery.
Utter, Delbert, Caldwell, fruits and vegetables.
Williamson, W. D., Madison, tree protectors.
Williams, Norman G., Shiocton, nursery.

TRANSACTIONS

OF THE

Wisconsin State Horticultural Society

SUMMER MEETING.

BARABOO, WIS., AUGUST 29th, 1906.

MORNING SESSION.

The meeting was called to order by the President, Dr. T. E. Loope, at 10:30 o'clock, in the Congregational Church.

After the invocation had been offered, the president introduced Mayor Marriott of Baraboo, who delivered an address of welcome:

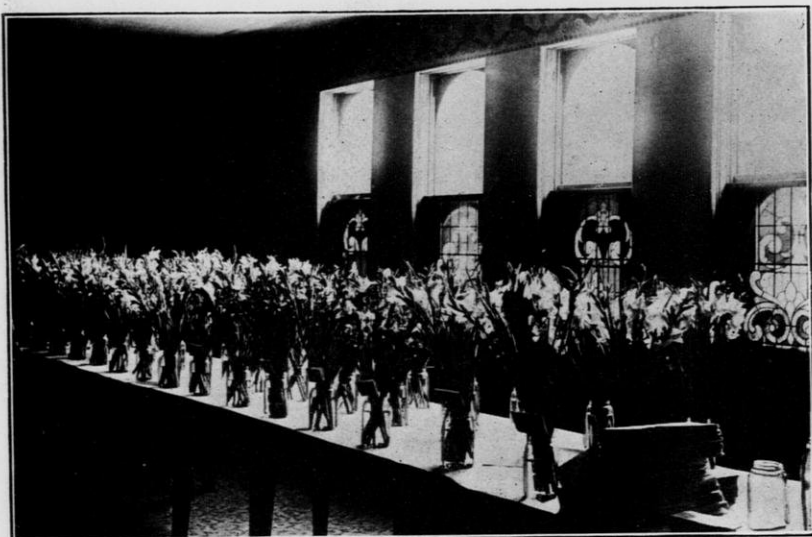
ADDRESS OF MAYOR MARRIOTT.

Mr. President, Ladies and Gentlemen of the W. S. H. S.: A week ago today I heard Mayor Bert Williams of Ashland deliver an address of welcome to the visiting League of Wisconsin Municipalities. His remarks were on this order:

"Ladies and gentlemen of the Wisconsin League of Municipalities, I welcome you to our beautiful city of Ashland"—he

paused a moment then said: "Gentlemen, imagine my peculiar position. Who of you have not been called upon in your official position to welcome different societies to your municipality and of course you all give a hot air talk about the beauties and advantages of your own city. That may be all right in some cases but imagine one mayor telling about 40 or 50 different mayors that his city or municipality excels all others. I might go on and describe the fine large bay that Ashland is situated on but if I say we have the finest bay in Wisconsin, Alderman Smith of Milwaukee will arise at once and say that Milwaukee bay is far superior to Ashland in beautiful parks and places of entertainment while your bay at Ashland is nothing but a lot of ore docks and saw-mills." The mayor very handsomely paid compliments to other cities in the same way until he came to Baraboo. He said that he could brag about their beautiful rivers with their large fish and if you wandered by the streams you would see deer, bears and other wild animals appear on its banks. Then he said "before I could sit down the mayor of Baraboo would arise and say Why thats nothing, you come to Baraboo and you can not only see big fish, deer, bear and other animals but on the banks of Baraboo River you can see sea lions playing brass bands, rhinoceros bathing in the river, animals of all kinds from the jungles of India and Africa, and its no uncommon sight to see 30 to 40 elephants on our streets at a time," so like Mayor Williams of Ashland, I will welcome you to our city and not tell you we excel all the other cities, for we do not, but when our main streets are paved, our new school house finished and the Horticulturists get to work and show their handiwork on our Court House Square, we will certainly have a city to be proud of, and ladies and gentlemen I would rather be Mayor of Baraboo than any other city in the state.

I do not want to take up much of your time in "words of welcome," I cannot but compliment you on the work you are engaged in, it must be a work of pleasure as well as a work of beauty. It was a question in my thoughts as to the difference between agriculture and horticulture but I find on looking up authority that horticulture "is the most perfect method of tilling the earth so as to produce the best results whether the products are objects of utility or of beauty." I also find that horticulture declined and was almost a lost art after the fall of Rome and that it did not revive to any great extent until the 15th and 16th century and that it took no prominence in the United States until about the year 1840 and 1845. To be a horticult-



Partial view of gladiolus exhibit by John Lewis Childs, Floral Park, N. Y.
at Summer Meeting, Baraboo, 1906.



Portion of gladiolus exhibit by Vaughn's greenhouses, Chicago at Summer
Meeting, Baraboo, Aug. 29, 1906. Water lilies in foreground
from Tower Grove Park, St. Louis.

turist one must needs be an agriculturist, a botanist, a naturalist and not least a philosopher each of these sciences performing no small part of your work.

Ladies and gentlemen again I welcome you to our city and hope your visit will be a pleasure to you all as well as a profitable one to the Society you represent.

RESPONSE.

President T. E. Loope.

Mr. Mayor, Ladies and Gentlemen: I have no set speech, nor no particular line of thought in which to answer the address of your mayor, but we came here somewhat with fear and trembling, and last night as I sat with some few of our horticulturists from a distance we certainly were inspired with a great deal of fear, because we heard what we thought sounded like the roaring of the lion, the scream of the laughing hyena and the trumpeting of the big elephant, and we did not know at what time they might make a charge on us and we would be destroyed, and I for one at least, took refuge in one of the highest rooms in the hotel.

Now, we are very glad to meet with you and we hope that we will get all of you into the Horticultural Society. We believe that we are very good people, we have that conceit, and I want to say to you now, those of you who are not acquainted with the horticulturist, that they are people who have imagination in a very large degree, and it is very necessary in their business.

But there are other things that happened to strike me yesterday in passing along through the country. So far as I could observe all the way I found that the oats and wheat and barley and rye promised to fill the bins to overflowing this year. I noticed that the corn-fields, waving very gracefully along the road, promised also that more corn cribs would be needed this fall to hold all of the corn. I noticed that the barns, so far as we could observe, were bursting with hay, and that everything seemed to betoken a great deal of prosperity to the ordinary agriculturist, and that even the tobacco fields looked very promising, and as I understand the prices are ex-

traordinarily high this year, and that you are going to reap an abundant harvest in that way, and I was wondering if you were all contented and happy over the prospect; it seems to me that all Wisconsin should be; that the laborer gets the highest wages in the history of the country as a rule, and there is an unlimited demand for more labor, so that the laborer should feel that he is in good times, that everything is promising.

Coming to the horticulturist himself, I think I may fairly say that so far as my observation goes and my knowledge, that the horticulturist this year has had a successful year. The demand for berries and small fruits of all kinds has been almost unlimited, with better prices than have almost ever been obtained before; the orchards are covered fairly well with fruit and all departments of horticulture have been flourishing. There is not any department that I know of that has been a failure and the prices have been good and I suppose that the horticulturist is rich; rich, if he has the horticultural tenth sense, or whatever you are pleased to call it, that is, imaginativeness and hopefulness. And I think we have a great deal to be thankful for, and I do not think we need to go to Virginia for better prospects, nor to Missouri, nor Texas, and we do not need to go even to Canada to grow more grain or more cattle, you can grow them in Wisconsin. All that is necessary is to use the energies that you have in the development of what business you have here, and I think Wisconsin is in that sense truly blessed and that everything seems to work together for the prosperity and happiness and contentment of its people, and I believe that as a rule we are contented and happy.

I wish to say in regard to our summer meetings that we have generally made them meetings of pleasure more than of real horticultural business, and when we look about us here and see all the beautiful flowers and all the rare specimens of plants, it seems to me that this meeting must be a success. It certainly will in that line. The only thing I would deplore is that we cannot get a better local attendance, an attendance outside of our Society so that we could demonstrate to them that we are trying to do something for the happiness of the whole people.



A TANGLE OF MOONSEED.
From Seventeenth Report, Missouri Botanical Gardens.

NATIVE VINES FOR SHADE AND ORNAMENT.

W. A. Toole, Baraboo.

While our native vines have not the showy flowers of some exotic species, their beautiful foliage makes them unexcelled as shade for porches and arbors or draperies for old fences, walks or stumps, while some are additionally desirable because of flowers or fruits. They are also hardy and with few exceptions free from diseases or insect pests.

While several varieties may be bought at nurseries, some of them are not as yet generally listed, and nurseries are not always available so it is often desirable to collect them. Good nursery grown plants are preferable if they may be had, owing to their better developed root systems but to a nature lover there is much joy in rambling through the woods, seeking suitable specimens for transplanting. Collecting should be done in fall or early spring, and vines with a woody stem should be very severely pruned before planting. To be certain of a heavy growth of healthy green foliage the soil must be rich and well supplied with moisture. It is well, before planting to stir in a quantity of well rotted manure.

As a support for most porch vines I have found nothing better than wire chicken netting. Any of the vines will need tying and training during their most rapid growth to secure an even distribution of foliage.

After a vine has been established for a few years the bottom growth may become thin unless a part at least of the stems have been trimmed back to within three or four feet of the ground to force low branching.

The American ivy (*Ampelopsis quinquefolia*) is the most commonly planted of our native vines, because of the wide uses to which it may be put and the ease with which it may be collected and transplanted. The dense, dark green foliage which colors to a beautiful crimson in autumn makes it attractive wherever planted.

For porches or arbors this ivy should be planted two to three feet apart, but if to climb the side of a stone or brick wall it is better to allow more room. The stem is able to cling to stone walls and the trunks of trees by sucker like disks on the tips of tendrils and by clinging rootlets. There has been

considerable controversy as to whether there is more than one species of American Ivy, one which clings to flat surfaces and one which does not. I am sure there is but one species around here at least showing, however, considerable variation in ability to cling to flat surfaces.

Where rock clinging varieties are needed, these showing this tendency quite strongly may be propagated from hard wood cuttings, taken in the fall and treated much like grape cuttings or the variety known to the trade as *A. Englemannii* may be bought at nurseries.

Some folks rather mourn that the Boston ivy (*A. veitchii*) is not hardy in Wisconsin. While both are desirable where it is possible to grow them I think our American ivy is fully as beautiful as the Japanese species and is adapted to a wider range of usefulness.

The wild grape is probably next in popularity and is the most used of any as a covering for arbors. It would be planted more if it were easily procurable. Many of those ornamenting homes owe their use to their happening to be in the right place when the house was built. The grape needs plenty of room in order to show off to advantage and is hardly suitable for small porches where it does not have a chance to spread some distance. In this city (Baraboo) there are some fine specimens of wild grape climbing large trees to a height of forty or fifty feet or more and spreading through the upper branches. The vines do not seem to injure these large trees but smaller trees would probably suffer by being smothered out with the heavy foliage of the grape.

The prairie rose (*Rose setigera*) has also, it is thought, been found as a native in this country. Its abundant late blooming flowers make it very useful, but it is probably well enough known not to need further mention.

The catbrier might be used as an ornamental but its thorny stem is objectionable and we have other vines much better suited to cultivation.

While truly vines, our honeysuckles may with the aid of a stake and some trimming be made to appear as quite attractive shrubs.

Growing wild they are generally found among underbrush in open places or brushy pastures. Here they twine their branches around those of the supporting plant until they reach the sunlight when they spread out in a tangled mass overtopping and often killing their support. In using as a shade for porches extra care is needed in training and trimming to se-



"The Virgins Bower is attractive in flowers, but the feathery seed vessels are still more beautiful." Native Clematis or Virgins Bower, *Clematis virginiana*.



Bitter sweet, *Celastrus scandens*.

were a pleasing effect. When established the silvery green foliage is very beautiful and attractive. The honeysuckles have rather more than their share of pests being troubled with a small green caterpillar, a black aphid and mildew. The yellow flowered species (*Lonicera Sullivantii*) is the more vigorous grower and in favorable seasons the flowers in their abundance are very showy.

The purple flowered kind (*Lonicera glauca* variety *Douglasii*) has a reddish purple tube with showy yellow stamens. The flowers are very handsome and there is considerable variation in shades between different plants, some being more attractive than others. The type of this species (*L. glauca*) has greenish yellow flowers and is not at all beautiful. While very suitable as a porch shade both species of honeysuckle show to best advantage if allowed to ramble over a low support four or five feet high.

The climbing bitter sweet (*Celastrus scandens*) is commonly met with in the woods twining around some sapling and often growing to a considerable height. At times it is found growing over an old stump or brushpile if a tree is not available. This vine is rather heavy for porches though with a little care in trimming and training makes a good shade. It shows to best advantage covering the trunk of a tree or climbing a pole or wherever it may make a tall growth. The scarlet and orange fruit is rather attractive in fall and early winter and there is notable variation in the brightness of the berries and the length of time which they will hang on the vine. For this reason it is well to note the most desirable plants during the winter and dig sprouts or make root cuttings from them early in the spring.

Few people seeing the moonseed vine (*Menispermum Canadense*) growing along a fencerow or even brush would think it worthy of cultivation but given rich soil and room to grow it gives surprising results. The stem seems hardly woody, yet keeps alive over winter nearly to the tips. Severe cutting back in spring induces a heavy growth of very large leaves. On one place in Baraboo it is allowed to climb up a water spout, being cut to the ground every fall and each summer making a rapid growth of from twelve to fifteen feet.

The virgins bower (*Clematis Virginiana*) is attractive enough in flower to make it desirable but the feathery seed vessels are still more beautiful. It is of more airy growth than those thus far described and makes a good porch shade or does well trained to a post or trunk of a tree. If trained

to a post or a pole, wires must be strung for it to clasp its leaf stems around or else it must be tied. While not a weak grower it will not stand crowding by other vigorously growing vines.

Clematis verticillaris or *Atragene* has a flower resembling a small *Jackmanii* but much less bright in color and blooms quite early in the spring. The blossoms are hardly highly colored enough to be handsome, yet it is well worth growing. It may be used in much the same way as the *Virgins bower*.

The aforementioned vines all have perennial stems, the following are herbaceous. The wild morning glory or bindweed (*Convolvulus*) seems too much of a weed to really be useful as an ornamental, however its closely shingling leaves and light pink or occasionally white flowers make it desirable. As often seen it is displayed from the slender support of a corn-stalk where its beauty is decidedly wasted. I have only observed it once used as a porch shade. In this case plants were put about six inches apart and allowed to run up strings or wires making a very ornamental shade. It is a perennial and in our fields is troublesome, spreading by underground stems, but I think it may easily be confined under-cultivation.

The wild cucumber (*Echinocystis lobata*) is an annual found wild along damp places next to streams, climbing over shrubs or underbrush. It is sometimes used as a porch vine, but is much more handsome where it has a solid backing as over brush piles, or stumps. An abundance of moisture and plant food are especially necessary to secure pleasing results with this vine.

The mountain fringe or climbing fumitory (*Adlumia cirrhosa*) is a biennial with delicate divided leaves and white or light pink blossoms shaped much like those of the squirrel corn. It is often cultivated and makes a pretty porch ornament but does not make a heavy enough growth for shade.

The following two kinds I have never seen under cultivation but I am sure they are well worth growing. The wild yam (*Dioscorea villosa*) has light green heart shaped leaves and inconspicuous flowers. The strings of peculiar three winged seed vessels make it noticeable in fall and winter.

Apios tuberosa or wild bean is listed in catalogs though I have never seen it grown. Its leaves resemble those of the *wistaria* in shape and color but smaller in size. The flowers which are somewhat bean shaped and borne in clusters are of a chocolate brown color and possess a delightful violet



Fig. A—American Ivy, *Ampelopsis quinquefolia* on bluffs at Devils Lake, Wis., showing that the native *Ampelopsis* sometimes develops adhesive disks for clinging.



Fig. B—Portion of vine shown in Fig. A.

like fragrance. It is found in rich moist woods climbing over underbrush.

The vines named have been found growing as natives within a few miles of Baraboo. There may be some others unknown to me found in other parts of the state.

DISCUSSION.

A Lady—I would like to ask if there is anything we can do for mildew on the honeysuckle?

Mr. Toole—I presume some of the fungicides can be used; I have never tried them, I do not know whether it might be checked or not.

Prof. Sandsten—We have had considerable trouble with mildew on the honeysuckle and other shrubs, and by using either ammonical or copper carbonate or bordeaux mixture we can control it, but in order to control it satisfactorily the bushes should be sprayed in the spring before the foliage comes out. In that case you can spray with copper sulphate alone, at the rate of four pounds of copper sulphate to 50 gallons of water. But if the mildew comes on the foliage after all, you will have to use lime in connection with the copper sulphate.

CULTIVATION OF NATIVE FERNS.

William Toole, Baraboo.

For success with outdoor ferns a reasonably favorable place is necessary. They are mostly lovers of shady sheltered places and do not bear crowding with other plants although often seeking shelter of closely overhanging foliage. It is true that they will sometimes live and thrive in exposed places if not crowded with weeds and grass but exposure to wind and sun gives a stiffness of outline which for instance we may notice in the lady fern so different from the gracefully curved fronds of the same species, grown amidst congenial surroundings.

The student in plant ecology would be interested to note the difference in growth of the *Woodsia Ilivensis* as found in its usual habitat on some exposed rock and afterwards transplanted to a sheltered place where it assumes much of the smoother texture of its near relative *woodsia obtusa*.

In shade of the dwelling house is generally chosen for the fernery and a corner open to the northeast is an ideal location for a small collection. If the north side of a building must be chosen it is well if the sweep of winds may be broken with some shrubbery. The shrub border often furnishes a favorable location for ferns. On Fourth Avenue in the city of Baraboo may be seen a fine bed of lady fern on the open lawn where there is a moderate shade of trees. Those having extensive grounds and a corresponding love of ferns could afford extra trouble to supply suitable conditions. A fair amount of humus should be in the soil of the bed and this may best be had from the coarse fibrous leaf mould to be found in the surface soil of any shady woods.

Soon will be experienced in the towns the annual nuisance of smoky fires from burning leaves gathered by those who wish to keep their lawn and sidewalks neat. If these leaves were put in some corner to decay with soil thrown over them they would yield a top-dressing for the fernery, shrub border or lawn.

In a small collection the choice for planting might be the lady fern and maiden hair as they are easily grown and may be found in almost any woods in Sauk county.

To increase the collection add the bladder ferns both the bulb bearing and the fragilis. These are found in more shady and rocky places than the preceding, the first two having long slender fronds if among shrubbery but both are easily grown. To these may be added the sensitive fern commonly found in grassy meadows and occasionally by shady roadsides. The fruiting fronds of the sensitive fern with those of the ostrich fern are quite ornamental with dried grasses for winter decoration.

Beautiful and interesting are the beech ferns and they are easily grown. The three evergreen shield ferns readily adapt themselves to the fernery, two of them are fairly common in shaded rocky places. With these may be grown *Woodsia obtusa* an attractive fern much after the style of the fragilis bladder fern but more robust. A collection of rocks is not necessary for the well doing of the kinds already mentioned but rocks arranged with good taste would make the surrounding seem more in harmony.



Asplenium thelypteroides, the Dells, Kilbourn, Wis.
All illustrations of ferns in this volume from photographs by Miss Blanchard Harper, Madison, Wis.

If we would grow the walking fern, Polypody, *Asplenium Tricheomanes*, and *Woodsia Ilivensis*, we should have rocks to support them. The last mentioned kind should be in an exposed situation as it seems to need occasional dryness, being often found in close company with our native cacti. The *Asplenium Tricheomanes* should grow in pockets of soil between rocks and like walking leaf and polypody should not long suffer from dryness.

If a bold effect with large ferns is desired we may use the ostrich fern and the so-called flowering ferns, that is the cinnamon fern, clayton fern and the royal fern. The first is found only where soil is deep and full of black humus, generally near some stream or spring. The name ostrich fern is readily suggested when the nearly unfolded young fronds are seen. It increases by underground runners and needs watching to keep it in place. The cinnamon fern is commonly found in swampy places near the borders especially if not far from sandy soil.

The Royal fern thrives in tamarack and shrubby, shaded swamps where sphagnum moss abounds and at its best is worthy of its name with fronds sometimes five feet long and a like distance spread across the plant.

The Clayton fern is found in shaded hillsides or by deep road cuts, but seldom in rocky places and not often in marshy ground. The last three may well have a place for some time with the smaller kinds of ferns.

I have never planted the Moonwort fern but it seems as if it might readily adapt itself to the places where the others succeed.

The Brake fern with its long underground runners seems scarcely suitable for planting with other ferns but might well be placed in the shrub border. The different species bear removal readily through late May and early in June. Many a pleasant trip may be made when seeking for the different kinds of ferns for while we may grow many species together if they are not overcrowded yet nature compels us often to go to places long distances apart to find all of the kinds here recommended.

When collecting your ferns be provided with a long sharp trowel, plenty of large sheets of newspaper and twine. Make moderate sized bundles of the ferns wrapped in papers and lay your parcels on the side in boxes or buggy bottom. Do not attempt to plant very large ferns as young plants bear removal better. If ferns are gathered for decorative purposes they

should be packed in the same way, not carried upright or with the fronds outspread.

In our fernery we may add to the variety of the collection such flowering plants as spring up early and have soon done their flowering and completed their growth. Of these may be mentioned blood root, Hepatica, the wood anemone, dutchman's breeches, lycopodium, rattlesnake plantain and partridgeberry as suitable companions with ferns and if there is room enough Solomon seal and others might be added for it seems more natural that some other growth should accompany the ferns, but always resist the temptation to overcrowd.

It is pleasing to note that in many gardens in Baraboo some of our native ferns are grown. Near the porch of one residence on Second Avenue, we each year admire a beautiful combination of Solomon seal and the Clayton fern. A little further down the street may be seen a nice collection of the bladder fern, with maiden hair and lady fern. In the same neighborhood are to be seen a number of small collections. In the city of Madison are several enthusiastic growers of our native ferns. Near the farm home, poultry are always present and the success with ferns requires that either plants or poultry be made secure with wire netting. Weeds, grass and poultry must have no place in the fernery.

A few ferns planted in a box in early spring make a nice adornment for a shaded porch and even in the house they are desirable and so easily grown. In the winter they may be grown in the house if given a rest and a little freezing before taking indoors. *Cystopteris bulbifera* has proven very satisfactory for this purpose.

In the foregoing account of ferns it has been the aim to use only common names when possible but for identification a list of these common and botanical names is here given.

Common names.

Polypody.
Maidenhair.

Botanical names.

Polypodium vulgare.
Adiantum pedatum.
Polypodium vulgare.

Spleenworts.

Lady fern.
Walking Leaf.

Asplenium Filix foemina.
Asplenium Trichomanes.
Camptosorus rhizophyllus.



Aspidium spinulosum. Kilbourn, Wis.

Beech Ferns.

Phegopteris hexagonoptera.
Phegopteris polypodioides.
Phegopteris dryopteris.

Shield ferns.

Christmas fern. *Aspidium spinulosum.*
Aspidium marginale.
Aspidium acrostichoides.

Bladder ferns.

Cystopteris bulbifera.
Cystopteris fragilis.

Onocleas.

Ostrich fern. *Onoclea Strutheropteris.*
 Sensitive fern. *Onoclea Sensibilis.*
Woodsias.
Woodsia Illivocensis.
Woodsia obtusa.

Flowering ferns.

Clayton fern. *Osmundia Claytonia.*
 Cinnamon fern. *Osmundia cinnamomea.*
 Royal fern. *Osmundia regalis.*
 Moonwort fern. *Botrychium Virginianum.*

DISCUSSION.

Dr. Everett—I would like to ask Mr. Toole what success he has had with the ostrich fern?

Mr. Toole—If you give it a deep soil you can readily have good success with the ostrich fern. As indicated in the paper, it spreads by rhizomes, it shifts its position and I believe you have to look out and save some of the younger plants to grow from.

Dr. Everett—What is the nature of the soil in which you have your plants growing?

Mr. Toole—Ours is clay soil. Whenever we gather anything like the walking fern, or things that seem to depend altogether on leaf mold, we are sure to get a good supply along with it and tuck it in the corners and all around it and see that it is well supported with what it needs, anything that gives us humus. By humus I mean the rotted matter after it has turned black; it need not be direct from the woods, provided you have that style of soil that has a great deal of decayed vegetable matter in it.

Dr. Everett—Do you plant near bushes, or trees, or larger shade?

Mr. Toole—Well, I have planted only near the house, with the exception of under one tree, but then as I have observed, they will do well if they have fairly good shade and if they are kept away from things that will overgrow and overrun them. You need not be confined to the house, but it is well to avoid a place that has a sharp sweep of wind. If not given a fair amount of shade they will live and grow, but still seem to lose their delicacy, they seem to grow more hard and stiff.

Dr. Everett—Don't you find the need of winter protection?

Mr. Toole—Well, where you have as many trees and shrubs around as is generally the case, you do not need to give any winter protection. The dropping of the leaves around them, if you are not too neat, do not clean them up to much, will afford sufficient protection.

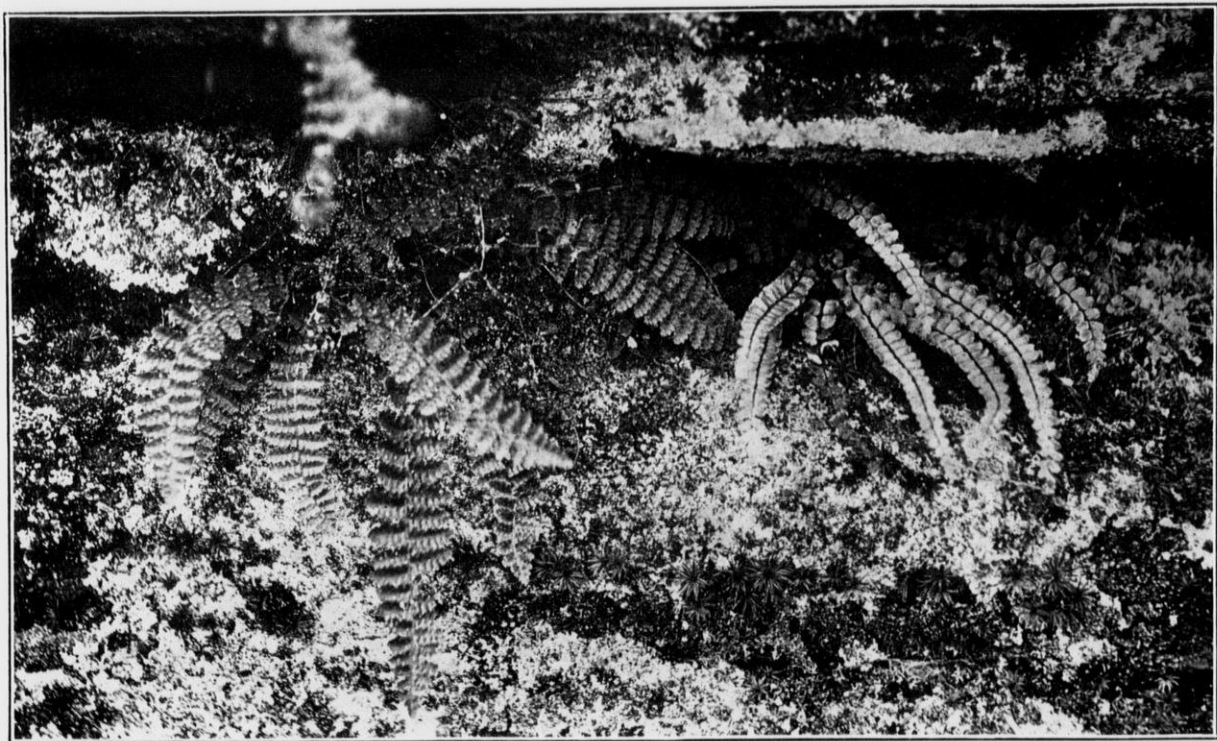
SOME NATIVE FLOWERS WORTHY OF CULTIVATION.

Dr. E. Everett, Madison.

Our native flowers are so numerous and beautiful and so large a number naturalize well, that I can mention only a few of them which will repay a moderate effort to maintain in our gardens.

I shall dwell principally upon how this can be successfully done, and thus be within the reach of any flowerlover.

The first and main condition to keep always in mind, is to give your plant the conditions as to soil, sun, shade, and moist-



Cystopteris fragilis.

Kilbourn, Wis.

Asplenium Trichomanes.

ure, as near to its natural habitat as possible. Some plants will live anywhere and thrive more or less well, others must have certain conditions or die. The flowers growing in the open in the sun all day as on our prairies, and along the railroads have a thick matting or protection in the wild grass roots and decayed vegetation, which during the growing period and summer's heat, keeps the soil moist, loose, and highly fertilized, and also provides a great protection through our long freezing and thawing winter.

Those plants in complete or partial shade, have the yearly quantity of leaves as a protection and source of fertilization, and an atmosphere of moisture from acres of shade. Thus we observe that a winter's protection is imperative and also a summer's mulch of surface earth or other material and a loose condition of soil for root development, for the maintenance of a fine specimen plant. No watering is necessary except for plants from a moist habitat, or where you cannot give the natural shade. These must have not only moisture but a soil rich in phosphorus and potash, and of sufficient humus.

Try only those plants that the conditions of your garden or grounds will grow well. All others will be vexatious, disappointing, and a useless expenditure of time, money and strength. An expert can assimilate conditions and give suitable requirements in substitution, but he knows how to use them, and when not to try the impossible. There are plants like some people, that you cannot provide with an agreeable environment. You have to leave them alone and agree with the poet when he says:

"Full many a flower is born to blush unseen
And waste its sweetness on the desert air."

The most successful method of transplanting the majority of wild flowers, is to remove them in their dormant state at the end of their season's growth. Some, though not so many, do well if moved in the early spring when first appearing. An expert takes them at any time. With the roots remove as much soil as you can, the more the better. Never let the roots be exposed to the air after being taken up; keep the soil firmly packed about them. Prevent the plant from wilting if possible. Set out late in the afternoon shade for a few days. Reshade at the first appearance of wilting. Moisten the soil somewhat after setting out, and in a few days as the plant appears vigorous, soak the ground. The earth for newly set plants should neither be dry nor wet. A good way is to let a

pail or so of water soak away where you will set a plant, and to spread an inch of dry earth over the surface soaked.

Our most beautiful and choice wild flower seems to be of the terrestrial orchids, the *Cypripedium*, (Ladyslipper, Moccasin flower). The origin of the botanical name is from two Greek words meaning an ancient name for Venus, the Divine Mother of the Romans, and a sock or slipper—Lady Slipper. The Indians of North America called it the Mawcahsum or Makkasin Flower, resembling little Indian moccasins. This name seems most appropriate for this country, and Lady's Slipper for Europe.

I will mention a few varieties for cultivation: *C. Spectabile*, or *Reginae*, *C. Parviflorum* (small yellow), *C. Candidum*, (small white). The yellow varieties are the most successful in transplanting. I know of gardens where they have been blooming successfully over ten years. The *Spectabile* requires more of its native environment or condition. In one garden it has been growing some six years. The plants are in the full sun 1-6 P. M. The stems are not as high as in the woods, though the flowers are quite as large. But plant and bloom are very vigorous. These plants are along a vine covered porch amidst ferns, trilliums, and other wild plants, making a matted shade about 6 inches from the ground that the sunlight never penetrates and hiding the soil from view.

I am most successful in growing *Cypripedia* amongst ferns on the north side of the house. This soil is one third sandy leafmold, 1-6 two year old cow manure, 1-6 one year rooted sod, 1-3 garden soil. This is one foot deep on a clay subsoil. The variety *Spectabile* does not take kindly to transplanting. It does not seem to have the vitality of the yellow, even in its native haunts. Magnus, a German scientist, in recent investigations on the Fungus,—*Mycorrhiza*, found in the Coralroot Orchid,—*Corrallorhiza*—says: These spores live in the fleshy roots of the Coral Orchid, and are supposed to keep the plant alive or well nourished. He and Frank also advance the idea, that the smooth and fleshy roots of this species and those of the *Cypripedium*, are thus fleshy and smooth and in a mass because they do not need the hairy filaments growing from them to secure sufficient nourishment in going far and near. Hence the principal reason these plants live but a short time when transplanted, is that the soil has not the conditions for the fungus—*Mycorrhiza*. All European botanical gardens as yet fail to produce a bog condition that the Algae will thrive in. The Bog soil is analyzed and reproduced, bogsoil is removed



Adiantum pedatum, Maidenhair fern, Kilbourn, Wis.

intact and still not the results obtained as in its native haunts. This is true of mineral waters. A chemist will analyze a water to every proportion. He will put these exact amounts or ingredients together, yet this artificial mineral water will not have the efficiency of the natural mineral water. Oftentimes it is worthless. This reminds us of what Burns says:

“The best laid plans o’ mice and men
Gang aft a-gee.”

Such are the disappointments of the ambitious man. But he must keep on, allying science to his ultimate success.

One thing we notice in the haunt of the two *Cypripediums*, *Pubescens* and *Spectabile*, they are never midst underbrush, but under or near trees. Oftentimes I have seen them growing out from the earth in the crotch, where the roots of an oak leave the body of the tree, and on rotted logs, or at their sides on the ground. These plants are from seedlings and this protected situation preserves them. Our *Cypripedium* are largely dependent upon seed for their perpetuation. I used to put my Moccasin flowers under the shade of bushes, as Lilac, *Syringia*, *Spiræa*, Roses, Flowering Almond, etc. Every one of them, some two hundred, came to naught in one to three years. They were mostly planted with 6 inches of soil taken out with each plant and sent in by freight in 300 to 500 pound lots. Two heavy sods were sent from Northern Michigan containing 30 *C. Spectabile*—they died under a lilac bush. Those that are blooming vigorously are the *Pubescens* and *Spectabile* under a small elm, and amongst ferns in another location.

As in the woods the upper mass of roots must be 4 in. below the surface. In August or September put on a mulch of one year old lawngrass cuttings or decayed vegetation, old chip dirt with no sawdust in it, or rotted oak stumps. For protection during the winter, cover with rye straw 4 to 6 in. after the ground is frozen an inch or two. Remove the straw after the frost has gone from under it and there is no danger of the ground freezing again. A month later cover with an inch of cow manure two years old, covering this with one inch of sand. You will be repaid by a fine specimen of whatever has its abiding place in this retreat. The wild flowers on the north side of my house are soaked every three to five weeks, for hardly any rain comes to this spot. I find that a porch between these plants and the foundation wall of the house is conducive to a more vigorous growth, as the soil under it acts as a reservoir for moisture. While the limestone wall is always moist it

gives none back. My best blooming *C. Pubescens* this year were in the sun 9-12 A. M. The plants were very vigorous and had shorter stems, but the blooms were as large as any from the woods, and a deeper, richer, yellow, the whole flower being much thicker in texture.

The varieties of *C.* can be forced for winter blooming most successfully.

The *C. Spectabile* or *Reginae* is truly the queen of the *Cypripediums*, tall, 2-3 feet high, with its broad light-green leaves crowned by a most beautiful moccasin flower of a clear pure white and a large blotch of bright rosy carmine in its front. You need to see them growing in the open or deeper woods, moist meadows and peaty bogs, to be fully impressed by their beauty and stateliness. You admire and hesitate to remove them, again admire and revel in the sight of all that are in view. Thus you use all your spare time, and say to your long stout transplanting knife, "You Vandal, spare that plant." At last your knife is suddenly plunged into the earth 10 in. and so on, leaving only such plants as you cannot carry away with you. The *C. Candidum*, growing on boggy or peaty marshes is small and very fragrant. The *C. Parviflorum* growing with the *C. C.*, is an intergrade of the *C. Pubescens* and also is very fragrant. These two varieties also transplant very well.

Among the earliest spring flowers appear the *Hepatica Tri-loba*, white and lavender. The Bloodroot, (*Sanguinaria*), is another, pushing up its white flowers and twisting and folding them up for the night. They will grow almost anywhere, better in a shady location. These two force easily. The *Dicentra Cuccularia* (Dutchman's Breeches) are unique, and coming early are very acceptable. They will grow best in partial shade. *Dodecatheon Media* (American Cowslip, Shooting Star) resembles *Cyclamen*. It responds to cultivation quickly, and will thrive in any soil or location, but best in a rich light loam, or in deeply upturned sod. I have stems 18 in. high, the size of a lead pencil. As they die down early, they will give space to other plants. I saw a fine effect in Lincoln Park, Chicago, in a circular bed of alternate rows of Shooting Stars and the dwarf *Delphinium*. They were very large and fine and just past their zenith as the *Delphinium* came out.

The *Trillium* (Wake-Robin, Woodily Birthroot), is amongst the characteristic and beautiful flowers of our American woods. It does best in rich moist wood mold, or give them a rich soil in partial shade, but they must have a loose moist soil and



Onoclea sensibilis. Sensitive fern, Kilbourn, Wis.

planted 6 inches deep. Trilliums are amongst the relatively few plants that are very showy and yet not coarse. They should be more commonly used. They are easily forced. The *T. Grandiflorum*, is the largest flowering variety. In Michigan a monstrous form is found, some 18 in. high. *Grandiflorum* is highly prized in Europe, and is imported in quantities to those private gardens for which England is so famous.

A few dozen make a fine showing for May and June. To produce the finest flowers, they should be gathered when the buds are full grown, but not open. Cut as long stems as possible, keep at a temperature not over 60 and fully supplied with water. They will expand to a larger size than if grown in the woods. They are easily forced. Seeds will produce blooming plants in 2-3 years.

Aquilegia (wild Columbine). The exquisite variety *A. Canadensis* was transplanted from the Virginia Colony to England for the gardens of Hampton Court by a kinsman of Tradescant, gardener and herbalist to Charles I. Dancing in red and yellow petticoats to the rhythm of the breeze, along the ledge of overhanging rocks—how attractive to the bumblebee. They seem more beautiful in Nature's garden than anywhere else. They naturalize well, but needing new plants yearly, and a winter's protection. *A. Coerulea* (Rocky Mountain Columbine), blue and white is very beautiful, showy and hardy. It is worthy the best position in our rock garden, and in choice mixed borders where the soil is free and deep. It is not perennial in all soils; therefore, let some plants go to seed yearly. Columbines are most effective in separate masses, and of one kind. In partial shade in sheltered nooks this variety in California grows some 6 ft. On the mountains of Colorado shorter, but a larger flower.

Tallest and most prolific of bloom among our native lilies and the most variable in color, size, and form, is the *Lillium Superbum* (Turk's Cap, Turban Lily). Its identity is sometimes nearly merged into its Canadian Sister, *L. Canadense*. The Turk's Cap *L.* is not bell shaped at maturity like the *L. C.*, it should be open much farther, until the six points of its perianth curve so far backward as to expose the stamens for nearly their entire length. One of the purple-dotted divisions of the flower measures $2\frac{1}{2}$ -4 in. in length. These flame colored lilies are 3-7 on a stalk, but under skillful cultivation, 40 will crown a stem 9 ft. high. *L. Canadensis* is a lighter yellow, its stem is shorter, and fewer buds. These lilies naturalize most successfully. The culture of lilies is important, but the ar-

rangement and grouping are even more so. They need a rich loamy soil, with some sand and leaf mold or peat. They should be planted 6-8 in. deep. A summer's mulch of decayed lawn or other grass. Protection during the winter is imperative. Two-year old cow manure, chip dirt, or rotted oak stumps. Peat is better. These lilies are best grouped among shrubs where their brilliancy is heightened by a back-ground of green. Another effect most charming is along borders. But lilies are beautiful anywhere. Their stateliness and grace, with their brilliant and delicately colored flowers, strongly appeal to the eye, and to the imagination as well.

Liatrix, (Blazing Star, Button or Snakeroot) is a hardy perennial. They respond readily to cultivation. Their handsome showy wand like spikes, 1-4 ft. high, of rose red purple flowers, are most effective amidst white and yellow, as the native *Aster*, *Golden Rod*, *Boltonia Asteroides*.

They are propagated by division in the spring, or seed in the autumn, varieties best for cultivation are the *Squarrosa*, *Scariosa*, *Spicata* and *Pycnostachya*, (*Kansas Gay Feather*). They are indigenous to North America. Fifteen or more species have been found all of which will thrive in our gardens.

Other successful plants I will give a list of, *Corydalis Glauca*, biennial allied to the Dutchman's breeches with finely cut foliage of a similar character. They grow anywhere on the rocks or in rich soil, always seeding. I have them coming up variously in my garden.

Petalostemon varieties; *candidum* and *purpunim* are best known, 1-2 ft. high. They are perennials seen along railroads, and prairies.

They thrive in any soil, but are found in a loose gravelly earth. Their roots are long, many and fibrous.

Solomon's Seal, (true and false), *Spring Beauties* *Bellwort*, *Valerian*. *Violets*, many varieties but I am very fond of the *Pedata*, *Striata*, *Viola Pubescens*, yellow (downy) *Blanda*, sweet and white, *Lanceolata*, *Baptisia*, (blue and white), *Wild Geranium* or *cranesbill*. *Tradescantia Virginica*, (*spiderwort*). *Anemones*; *Canadensis*, *Rue*; *Phil*; *Wood Quinquifolia*. *Lobelia syphilitica*, *Lobelia Cardinalis*, *Mertensia Virginica*, *Jack in the Pulpit*.

Mints: *Canadensis*, the only native mint. *Mountain Mint*, *Monarda Didyma* and *Fistulosa*.

Eupatorium; *Purpureum* and *Album*; *Marsh Marigold*.

Gentian: white and blue (closed and open). *Meadow Rue*, *Mandrake*.



Onoclea sensibilis with fruit (Sensitive fern), Kilbourn, Wis.



Sarsapilla, Shin Leaf, Tansy, Princess Pine, Helenium Autumnale, Vervain, blue and white; Yarrow, white and pink, Spikenard, Asralia Racemosa.

Blue Flag, Iron Weed (*Veronia Novaboracens*); *Avens Trifolium*, Evening Primrose (*Oneothena Biennis*).

Aster, (Starwort, Michaelmass Daisy). There are few classes of plants that afford better material than the native aster for hybridization; it responds most readily to cultivation. There are some 200 species, about 150 of which are in America. Some species grow in the Himalayas, 15,000 feet above the sea. This aster is seen more in our gardens now than an increasing demand is abroad for native flora, especially perennials. In England particularly, have they been valued for a century or more. There is a quiet beauty about the better varieties, with their varying color, form bud and bloom. They are most decorative for cutting. They and the golden rod are the best known and appreciated of our native flowers, adding greatly to the beauty of our autumn landscapes. Every garden should have a few varieties that do not spread rapidly. I know from sad experience that some varieties will spread all over one's grounds in 2 or 3 seasons. These beautiful, vigorous perennials are generally blueish and white, and most showy in masses, planted in half neglected places, in copses and among groups of shrubs. They should not be as high as the surrounding shrubbery. Golden rod, mixed in, makes a beautiful autumn effect in the open woods, as does cosmos in the more exposed places. None of these plants require staking, care, or winter protection, and they have no diseases—most valuable considerations. By annually dividing, manuring the ground, and giving plenty of room, their blooming is longer and grander. You maintain a better bloom each succeeding year by not allowing the seed to mature. I will mention a few good varieties: *A. Longifolius* is most showy, growing in the pyramidal form, completely covered with bright, rose-colored flowers, until frost; *B. Shortii* is tall, and has large blue flowers. *Ericoides*, white, one of the earliest and prettiest, a great favorite in England, needs the full sun, and where the roots can penetrate deeply. *Amelus*, variety *Bessarabicus* (a Russian Starwort), one of the best and largest purple species, comes in August and September. *Horizontalis*, rosy lilac; *Turbanallus*, a soft lavender; *Grandiflorus*, a violet blue; *Paniculata*; *Patens* or Purple Daisy, purple blue early in August into October; *Tarmicoides*, white; the *Novæ Rubra*, bright rose colored: the *Novæ Angliæ*, large bluish-purple, yellow

center, is most familiar to us. Every garden should have this grand variety. This aster and *Novi-Belgii* are the best for pot culture, especially the latter, which gives a large flower, and a longer period of bloom. Cuttings and offshoots in the early spring make large plants by autumn; eight to twelve inch pots should be used; their chief need is quantities of water. These asters grow in a variety of soils, which can be easily observed. A most hardy perennial aster is the popular *Stokes Blue*, *Cyannae*. This variety is a native of our southern states, but in order to be appreciated it had to be reintroduced from Europe, having been known there since 1764.

Solidago. (*Golden Rod*). Few American wild flowers are better known than *Golden Rod* and *Asters*. They play an important part in beautifying our autumn scenes. The species is very large and is found in every variety of soil and location. You see them everywhere, even in swamps and barren stretches of sand. Beginning to bloom in July, they continue until November when most of our trees have lost their foliage. It is a gross feeder and impoverishes any good border, even exterminating valuable plants. They are best amongst shrubbery or in a copse. The best varieties *S. Altissima*, *S. Canadensis*, *S. Grandiflora*, *S. Nutans*, *S. Multiflora*, *S. Rigida*, *S. Sempervivens*, *S. Speciosa*, *S. Patula*, *S. Rigosa*, *S. Juncea*, *S. Lanceolata*. I have the *Canadensis* and *Speciosa* growing 8 ft. high. They improve by transplanting.

Bryant's reference to the golden rod in his beautiful lines in the "Death of the Flowers," is particularly applicable to the latest *S.* to bloom, *S. Petiolaris*.

"The wind flower, the violet, they perished long ago.

And the wild rose and the orchis dies, amid the
summer glow;

But on the hill the golden rod, and the aster in the
wood

And the yellow sunflower by the brook, in autumn
beauty stood,

Till fell the frost from the clear cold heaven as falls
the plague on men,

And the brightness of their smile was gone, from up-
land, glade, and glen."



Asplenium marginale, Kilbourn, Wis.

DISCUSSION.

Mr. Tiplady—You have mentioned enough of the native perennials for any one to take a list from. I would like to ask you, Doctor, what you find best for a ground cover? It is very important for shrubbery and tall growing specimens of all kinds to have a ground cover of some kind, in order to cover up the bare ground, and I would like to know what is the best thing for that purpose?

Dr. Everett—I think a very pretty thing is *Corydalis*, I do not know the common name of it; it comes early and blooms all the season and it takes a hard frost to kill it. I think it is a very beautiful thing, something in the form of the *gypsophila*.

Mr. Tiplady—I would like to say for the information of the members here that for a ground cover I find that *Nepeta glechoma* and *Lysimachia nummelaria* are two of the best ground covers that we have. The first mentioned is called, as a local term in England, Ground Wave, and the other one I speak of is called, locally, Creeping Jennie, and it is also of a semi-aquatic nature.

Mr. Toole—In regard to the *lysimachia*, I always advise people that they had better not get it around their grounds or lawns, unless they have something that they want to cover up, but in the ordinary garden it is an abominable weed.

Mr. Tiplady—The *lysimachia* is one of the most useful little things we have. For instance, where a drive runs along the shady side of a residence where grass will not grow, it can be used as an edging. Also in formal garden work where the beds are divided by old-fashioned stepping stones, the *lysimachia* can be used with good effect.

Mr. Moyle—I am willing to admit to the gentleman from Lake Geneva that this plant is a valuable one, yet, like Mr. Toole, I want to warn people against planting it. It is like *Creeping Charley*, that is the plant that you find in the back yard and everywhere. If you have a lot of rock that you want to cover, that is the thing to plant, but an ordinary man with a small garden does not want to plant the thing, because it is a terrible pest; it will cover everything, fences and stones and everything that comes along.

The President—I would like one of our friends from Lake Geneva to give us a brief history of this *Victoria Regia*; it would be interesting, I think, to the audience that do not know the plant so well.

Mr. Tiplady—The *Victoria Regia*, this wonderful giant water lily, is a specimen from the Botanical Gardens at St. Louis. Along with the specimens of the leaves we have a box of water lily flowers, two of which I find are the *Victoria Regia*. It grows wild in the Amazon River and was shown as a specialty at Kew Gardens when I was there in 1885. The leaf turned up on its edges might assume an artificial aspect, or foreign, but there is nothing artificial about that turning up of the leaf at all, that is perfectly natural, and the under side of the leaf is covered with air globules; from what examination I have made of it, they give the leaf buoyancy enough to carry a child. I saw two boards spread across the leaf at the gardens at Kew, on these two boards was a chair and on that chair was a little girl about six or eight years old.

I also noticed *Victoria Regia* growing in Lincoln Park in an outside pond artificially heated. This pond had a pipe running around it, supplying heat to the water. Of course I do not expect very many of my listeners here now will ever attempt to grow *Victoria Regia*; it is a cinch you cannot grow it in a washtub, but where these come from they can grow it; they have plenty of room and plenty of experienced help, which is necessary in growing this wonderful lily. Mr. Strombeck, of Lincoln Park, has had some seeds of the *Victoria Regia* in the tank in the greenhouse and I happened to be with him when he was examining those seeds after three years of submersion, and out of 25 or 30 seeds he found only three germinated, and others showing signs of germination, which goes to show that at least three years are necessary for the germination of the seed.

THE MISSOURI BOTANICAL GARDEN,

William Trelease, Director,
St. Louis, Mo., September 4, 1906.

Mr. Cranefield:

I am delighted to learn from your favor of the 31st, addressed to Mr. Irish, that the *Nymphaeas* and *Victorias* added to the success of your Baraboo exhibit.

I trust that your official records may show clearly that the exhibit was made by the Superintendent of Tower Grove Park, St. Louis,—adding, of course, if you wish to,—through the interest of the Missouri Botanical Garden; but I should like to make sure that the credit for the plants is placed with the Park.

Very sincerely yours,

WM. TRELEASE.

Mr. F. Cranefield, Secretary.



Woodisia livensis, Kibourn, Wis.

AFTERNOON SESSION.

ALL THE NATIVE SHRUBS WORTH PLANTING.

John Tiplady, Lake Geneva.

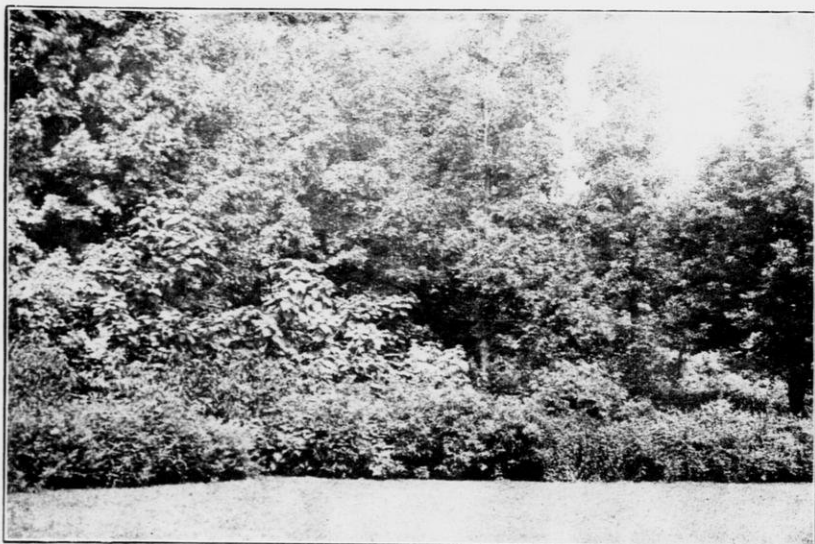
We can all remember the time when a native shrub was not considered worthy of cultivation for the simple reason that it grew wild along the wayside, but when we stop and examine a native specimen and sum up its real merits we are surprised to find it is equal if not superior in many respects to the foreign kinds. For many locations I prefer the native, not for its hardiness alone, its beautiful flowers, foliage, fruit and colored branches, but for its adaptability to existing conditions. For covering a steep bank where a lawn cannot be maintained what is better than the Coral Berry (*symphoricarpus vulgaris*) a native shrub possessing both upright as well as trailing branches which root at each joint thus protecting the bank against damage by heavy rains. We often see planted around railway stations and public city institutions of all kinds, foreign shrubs illy adapted to the surrounding conditions miserably existing. Our native shrubs are more used to these conditions, often being covered with dust during the dry season, twisted and shaken by heavy winds and laden down with ice and snow in winter. Yet they withstand these impositions with apparent impunity and after a favorable shower and a little sunshine continue to shower forth to the passing public the glory of their wonderful existence, proving beyond a doubt they are built of just the right kind of material to defy the heat and dust in summer as well as the ice and frost in winter. That they possess a wonderful degree of beauty and usefulness cannot be gainsaid neither can it be denied that they are now being introduced into society when we consider the fact that the leading landscape architects of this country advocate their use in a very large measure. Who would have thought twenty years ago that nurserymen would be propagating for sale thousands of *Viburnum Dentatum*, *cassinoides*, *Lentago*, *Opulus* and a host of others and yet such is the case, and I am told by reputable nurserymen that the supply is unequal to the demand. At the close of my address as a matter of discus-

sion will some member show me where the foreign shrub, all things considered, supersedes our natives. Mention one possessing two distinct features in its growth such as we find in the Coral Berry. Van Houten's spirea is gorgeous for about two weeks with its graceful flowers in countless clusters, but what is it after that? Merely ordinary autumn foliage. Figure out the number of days that a foreign shrub is especially attractive and I shall endeavor to mention a native that has its foreign rival beaten to a standstill.

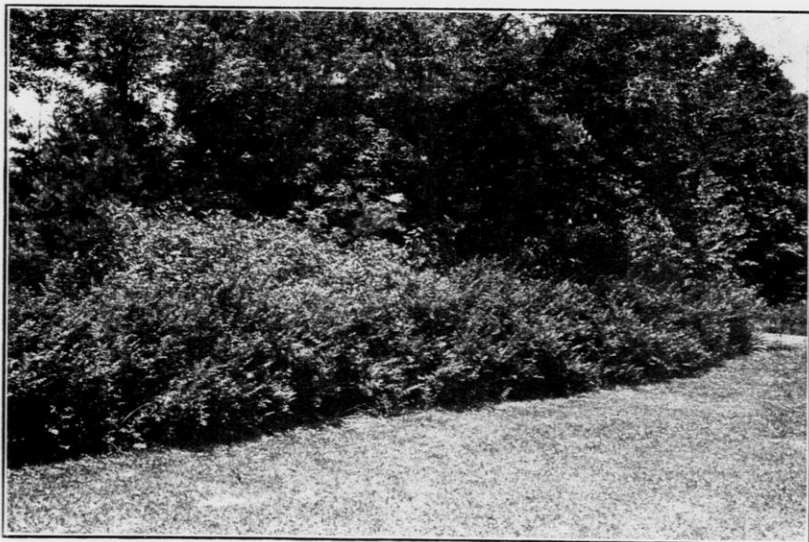
For border plantations native shrubs may be selected each one possessing its own peculiar characteristics. *Cornus floridum* for instance excels and continues to bloom for two or three weeks followed by foliage of a grayish green color to a beautiful red. It is regarded as one of the most valuable for ornamental planting. Others excel in fruit such as the highbush Cranberry (*Viburnum Opulus*) which stands as a leader in the red fruited section and justly so. Its berries color early from green to yellow by August and a fiery red by October continuing until the middle of winter it is right to consider it a leader. Others again are considered favorites for the glorious foliage effects in the symphony of autumn coloring. The champion in this class probably being *Viburnum cassinoides* (the Appalachian tea or withe rod) considered by Prof. Sargent perhaps the most beautiful of all. He praises the beauty of the thick shining leaves and the great compact rounded clusters of flowers, but the autumn coloring of its foliage is its principal feature, rivaling if not excelling the rainbow in its color effect.

Others too possess an appreciable amount of autumn colors especially that humble little shrub of the woodland "*Viburnum Acerifolium*" common known as dockmackie or maple leafed arrow-wood. It is classed among the smallest of *Viburnums* scarcely ever exceeding more than four or five feet high in the shade, but it grows somewhat taller in the open border. These two varieties with perhaps *C. floridum* added are rivals for first honors in the "free for all" race for autumn coloring and too much cannot be said in their favor. The downy leafed Arrow-wood (*V. pubescens*) comes highly commended. Mr. Manning says:

"The whole plant is covered with white flowers in early June followed later with berries of the deepest blue black. Although a native of rocky woods and thriving in a dryish soil it also does well in the open border. It forms a shapely bush and the foliage in autumn is an attractive dark color almost black."



Wild Gooseberry, *Ribes oxocanthoides*, (at right) used for facing down a row of tall shrubs and trees on the line fence. Grounds of H. H. Porter, Lake Geneva, Wis. No. 7 illustrating Native Shrubs, Tiplady.



Coral Berry, *Symphoricarpos vulgaris*, used for facing down taller shrubs on line fence. Useful for covering steep banks. Grounds of H. H. Porter, Lake Geneva, Wis. No. 8 illustrating Native Shrubs, Tiplady.

I have had prepared a few photographs showing some of the purposes to which native shrubs are available. These pictures were taken on the grounds in my charge and whereas they hardly do credit to the shrub itself the object of their being planted there is seen at a glance. Plate No. 1 shows a service road screened from residence by *Cornus stolonifera* or red osier. Number 2 shows a belt of Prickly Ash (*Zanthoxylum Americanum*) just now bearing rose colored berries packed in clusters around its branches. Plate No. 3, continuous groups of native shrubs and wild flowers taken from the lawn side, service road being entirely screened. Number 4, same group taken from service road showing residence and lawn effectually screened. Number 5 continuation of No. 4. Plate No. 6, lawn group of *Cornus paniculata*. This shrub is used extensively in shrub plantations as it adapts itself to all conditions whether the soil be wet or dry, rich or poor, the location shady or in full sunshine. Plate No. 7 shows a mass effect on property line fence, the taller shrubs being faced down by dwarfier kinds. The wild gooseberry (*Ribes oxycanthoides*) serves this purpose best as shown in the right hand corner. Plate No. 8 shows the coral berry serving the same purpose. Plate No. 9 shows a group of natives with the wild black currant on the left, the idea of this being to have the shrubs meet the grass with no intervening strip of bare ground. These pictures are taken with a view of inducing people to plan the arrangement of their home ground however small these may be and make them in pleasant weather as livable and attractive and as free from the gaze of the curious public or prying neighbor as are the rooms of the house and attractive at all times to look upon. By a careful study of these suggestions any one at a minimum cost may make their home grounds more attractive than we often see them and when we consider the fact that the time and money spent is a valuable asset to the property we cannot help but wonder why people do not take advantage of the beauties of nature more than they do. Here I find myself drifting from my subject and beg your pardon. I still wish to say a few words in praise of the common elder (*Sambucus nigra*), bordering the streams and lanes with its spreading clusters of cream-colored flowers which emit a peculiarly pleasant odor followed later with large clusters of dark berries often used for making wine. It was a common practice with boys where I was raised to cut up the fine white wood into skewers which were sold to the butchers.

Roses. In wild roses we have a number of useful varieties. *Rosa setigera* (the Michigan Prairie rose) can be seen on private estates around Lake Geneva planted in large clumps. During July it is completely covered with pinkish single blossoms that add color to its long drooping branches. Other varieties of equal beauty are *R. humilus*, *R. lucida* (from which we have a Hybrid "lucida alba"). *Rosa Carolina* of the swamps and *R. nitida* of the wayside. Native evergreen shrubs in my opinion are not so numerous however. The ground hemlock and common juniper may be used for lawn specimens but the most useful of all is the *Thuja Occidentalis* (the *Arbor Vitae*) used possibly more than any other as a hedge plant. When planted in good soil it makes a vigorous growth thus admitting being trimmed into any desired effect. Another good hedge plant is the common barberry (*Berberis vulgaris*) although of European origin it has become thoroughly wild in many parts of this country and being extremely hardy adds one more to our already long list of useful shrubs. The flowers emit a peculiar fragrance and the stamens possess the animate power of responding to the touch. Take the point of a tooth pick and try it on an open flower.

I give, herewith, a description of two poisonous natives for the information of those who are unable to distinguish them from harmless plants which at a casual glance they somewhat resemble. Poison Sumach (*Rhus venenata*) is a native shrub six feet high and extremely poisonous to many. Usually found growing in swamps, has light yellowish bark, dry light gray seeds in loose open clusters; whereas the harmless species grow in dry land, have dark bark, large dense conical bunches of red seed and narrow leaflets.

Poison Ivy (*Rhus Toxicodendron*) often found climbing is also very poisonous to many persons. It is often confused with the Virginia Creeper which has five leaflets while the leaves of Poison Ivy are three divided. The berries of Poison Ivy are light colored while those of the Virginia Creeper are black. Poison Ivy is reputed to be especially harmful in dull weather or at night.

I have here compiled a list of shrubs (giving the common and botanical names) best adapted to the different locations and conditions.



Wild Roses.



New Jersey Tea, a low-growing native shrub.

Native Shrubs from 6 to 12 feet high for back row of Shrub Plantations.

Common name.	Botanical name.	Remarks.
Prickly Ash	Zanthoxylum Amer.	Light, shade, or sun
Hoptree	Ptelia trifoliata	Light, shade, or sun
Winter berry	Ilex verticillata	Light, shade, or wet soil
Staghorn Sumac	Rhus typhina	Poor soil
Smooth Sumac	Rhus glabra	Poor soil
Shadbush	Amelanchier Canadense	Poor soil
Ninebark	Spiraea Opulifolia	Rich or poor soil
Witch Hazel	Hamamelis Virginica	Shade, gravelly soil
Spice bush	Lindera Bendoin	Wet soil
Silky Dogwood	Cornus Sibirica	Wet soil, light shade
Panicled Dogwood	Cornus Paniculata	Wet soil, White ft.
Round leaved Dogwood	Cornus Circinata and Flor-	
Elder	ida	Wet soil, White ft.
Cranberry tree	Sambucus nigra	Wet soil, Black ft.
Arrow wood	Viburnum Opulis	Wet soil, Red ft.
Nanny berry	Viburnum dentatum	Shade or sun black ft.
Speckled Alder	Viburnum Lentago	Wet ground
Apalachian tree or	Alnus Incana	Wet ground
Withe Rod	Viburnum cassinoides	Flowers and fruit light
Bladder nut	Staphylea trifolia	green

Medium and small native shrubs suitable for edges of Border Plantations.

Common name.	Botanical name.
Shrubby St. John's wort	Hypericum prolificum
New Jersey Tea	Ceanothus Am.
Fragrant Sumach	Rhus Canadensis
Dwarf cherry	Prunus pumila
Chokeberry	Pyrus arbutifolia
Dwarf June Berry	Amelanchier Can.
Meadow Sweet	Spiraea salicifolia
Steeple bush	Spiraea tomentosum
Wild Raspberry	Rubus strigosus
Flowering Raspberry	Rubus odoratus
Shrubby Cinquefoil	Potentilla fruticosa
Swamp Rose	R. Carolina
Dwarf Wild Rose	R. Nitida
Gooseberry	Ribes oxycanthoides

Native shrubs that will grow in light shade.

Common name.	Botanical name.
Prickly Ash	Zanthoxylum Amer.
Winterberry	Ilex verticillata
Burning bush	Euonymus atropurpurea
New Jersey Tea	Ceanothus Americana
Fragrant Sumach	Rhus Canadensis
Ninebark	Spiraea Opulifolia
Fl. Rasp	Rubus occidentalis
Gooseberry	Ribes Floridum (useful for edging as the foliage droops to ground)

Common name.	Botanical name.
Witch Hazel	Hamamelis Virginica
Silky Dogwood	Cornus sericea
Round leafed Dogwood	Cornus circinata
Red berried Elder	Sambucus racemosa
High bush Cranberry	Viburnum Opulus
Dockmackie	Viburnum acerifolium
Arrow wood	Viburnum dentatum
Sheepberry	Viburnum Lentago
Coral berry	Symphoricarpus vulgaris
Snow berry	Symphoricarpus racemosa
Bush Honeysuckle	Diervilla trifida
Bladder nut	Staphylea trifolia
Sweet pepper bush	Clethra Alnifolia ¹
Sweet Fern	Myrica Asplenifolia ²
Common Juniper	Juniperus communis
Ground Hemlock	Taxus Canadense ³

¹Wet soil, white flowers, fragrant.

²Poor soil, fragrant.

³Leaf mold, shade.

Native shrubs best adapted to wet ground.

Common name.	Botanical name.
Winter berry	Ilex verticillata
Chokeberry	Pyrus Arbutifolia
Shrubby Cuiquefoil	Potentilla fruticosa
Dwarf Wild Rose	R. lucida
Wild Black Currant	Ribes floridum
Spice bush	Lindera benzoin
Red Osier Dogwood	Cornus stolonifera
Elder	Sambucus nigra
Button Bush	Cephalanthus Occidentalis
Swamp Blueberry	Vaccinium corymbosum
Sweet Fern	Myrica asplenifolia
High Bush Cranberry	Viburnum Opulus
Sweet pepper	Clethra Alnifolia
Bitter Sweet	Solanum Dulcamara
Speckled Alder	Alnus Incana

Native shrubs that will grow in poor or light soil.

Common name.	Botanical name.
Common Barberry	Berberis vulgaris
Shrubby St. John's wort	Hypericum prolificum
New Jersey Tea	Ceanothus Americana
Staghorn Sumach	Rhus Typhina
Smooth Sumach	Rhus glabra
Dwarf Cherry	Prunus pumila
Shadbush	Amelanchier Canadensis
Dwarf Wild Rose	Rose nitida
Witch Hazel	Hamamelis Virginiana
Round leafed Dogwood	Cornus circinata
Coral Berry	Symphoricarpus vulgaris
Bush Honeysuckle	Diervilla Trifida
Black Huckleberry	Gaylussacia resinosa
Sweet Fern	Myrica Asplenifolia
Common Juniper	Juniperus communis



Clump of Prickly Ash, *Zanthoxylum Americanum*, used to screen a public walk from a country home. Grounds of H. H. Porter, Lake Geneva, Wis. No. 2 illustrating Native Shrubs, Tiplady. See page 27.



Native shrubs along service road at H. H. Porter's, Lake Geneva, Wis. No. 5 illustrating Native Shrubs, Tiplady.

DISCUSSION.

Mrs. Hugh Kelly—How do you keep Jersey tea from spreading? I find when I cut off my seeds that the plant dies, and if I let the seeds dry, so many little plants come up that it gets to be a nuisance.

Mr. Tiplady—Cultivation will do that. Let the seeds fall; hoe them up when they germinate in the spring.

Mrs. Johnson—Will the sweet pepper bush and sweet fern survive the winters in this part of Wisconsin?

Mr. Tiplady—Positively live through the winter without protection, both of them. The sweet pepper bush, the *Clethra alnifolia*, grows around Lake Geneva, also around Oconomowoc; it is a good blooming and sweet scented shrub.

Mr. Toole—I would like to ask Mr. Tiplady if he has ever had any experience in transplanting the leatherwood? Out of a couple of dozen I have planted I have had one small one live. I have taken large ones and small ones and yet cannot make them live.

Mr. Sandsten—Mr. Toole the year before last sent me six of the leatherwood bushes and I had no difficulty at all in making every one of them grow.

PRACTICAL BOTANY.

Prof. A. B. Stout, Baraboo.

This paper is attempted with the understanding that the subject be presented mainly from a teacher's point of view and that it should refer chiefly to that teaching of botany in the Public Schools which pertains more or less directly to the interests of Horticulture. This in general is the interpretation to be placed upon the rather condensed topic of "Practical Botany."

In beginning we must note that as a science botany has made a remarkable advance during the past few years. The microscope with other improved means and methods of study has made known the structure and life histories of the lower forms of plant life. This has also revealed the real structure, life history and physiology of the higher plants. The un-

solved problems in botany now pertains to extension of knowledge along rather special lines. All the simpler phases of the entire plant life have been reduced to a well defined science.

So rapid has been this progress that the teaching of the subject in the schools has not kept apace. Time does not permit nor does the topic require that we should consider reasons for this. Suffice to say that the instructions of a few years ago is entirely inadequate for the needs of today.

The instruction given in the public school should impart a symmetrical knowledge of the various fields where there is application of the principles of botany. If given its due share Horticulture claims a large measure of consideration. Without any attempt to arrange a course of study let us mention some of the phases of the study.

Our lives are closely related to the production and consumption of fruits and vegetables and to the raising of ornamental plants. The life histories, the structure and physiology of higher plants must be included in the course given in our public schools. The main object of this is to treat the plant as a living organism considering such problems as requisite for germination, influence of heat, light, air, water and conditions of soil. This will involve adaptation, the struggle for existence and other phases of evolution. It is almost needless to state that these processes can best be understood when based upon a knowledge of structure. Yet the essential vegetation structures of all flowering plants is so nearly the same that a few weeks of study will give this phase adequate treatment. Morphology of Flowering Plants should be taught in secondary schools mainly for the purpose of making clear life processes. Yet the life activities of the plant is the sum total of the functions of the various parts. It is certainly practical to give such knowledge of roots, stems and leaves as will give an understanding of the plants in action. Much of this must be determined by laboratory methods hence the school room with proper equipment affords splendid opportunity for this line of study.

The various means of propagation can be taught inductively. In this connection the treatment of flowers fruit and seeds is a fertile field for study. Form and structure of flower parts were about all that earlier botanists considered. Today our interest centers in the function of those parts involving the various interrelations to insects. In nature the flower is but a means to an end and hence it should be so considered.

The floriculturist's interest rests chiefly in the flower itself and he often takes advantage of the plant to secure an abnormal growth of flower parts. But with most of our relations the real interest centers in the production of seeds and fruit. Yet in the entire field of botany there is no structure so complicated in its development and morphology as seed. In the treatment of seeds and fruit many of the more difficult problems must be omitted but general classes of fruits, weed seeds, adaptations for dispersal and other related topics can readily be handled.

Thus far we have considered the flowering plants and much of this work should be done in the grades under the head of nature study, but if instruction ceased here, much that is extremely practical would be omitted and the pupil deprived of the greatest field of botany study.

Certainly no course should be completed without a treatment of bacteria. Their great economic importance makes this imperative. Their structure, life history and importance as agents of decomposition, nitrification, can be made intelligible to High School students. Other phases of increasing interest are pathological conditions resulting from parasitic fungi. No one can practice any kind of agriculture without meeting some phase of this problem. Spot diseases in leaves and stems, fruit rots, scabby apples, plum pockets, smuts, rusts and mildews abound. While at present it does not seem to be the function of the Public School to give a complete course in fungal diseases yet it certainly seems that with other types of fungi, a rust, a smut and a mildew should be considered especially with reference to life history, injurious effects and means of control. Besides this every High School should have a representative collection of such prevalent forms as the above named. With the life history of a few types well in mind the pupil aided by talks from the teacher can become familiar with the various disease producing fungi. The smut of oats and the rusts of grains should be among the types considered. Pupils living in cities may not come in contact with some of the forms injurious to general farming and they should be especially encouraged to examine the plants of garden and lawn for presence of fungal diseases.

We have now briefly pointed out these lines of practical study relating to the field of Horticulture.

1st. Treatment of the structure and physiology of the vegetative flowering plant.

2nd. Reproduction of the plant with involved problems.

3rd. Pathological conditions resulting from parasitic fungi.

There are other phases of study that are perhaps as important which at first thought may appear less practical. It is not easy to separate the practical from that which is absolutely necessary, at least to get any sort of general agreement on that point.

The scope of botany is broad. Even the mastery of a group of plants requires a life study. Starting from the beginning it would take a student a whole year of constant study to learn the names, the general characteristics, the varying phases of life, of the trees and shrubs of this vicinity. It takes years to obtain a speaking acquaintance with all the flowering plants. In High Schools a year of work is mostly devoted to botany. An hour of study and an hour of recitation a day makes ten hours a week. Practically 36 days of steady work is devoted to botany. We can not produce botanists in that length of time.

Considering all conditions what is the most consistent treatment of the subject? To my mind it is one giving a general view of the entire field of botany through a study of prominent types, of algae, fungi, liverworts, mosses, ferns and flowering plants. Two liverworts, one moss, one fern and possibly an allied form can be thoroughly presented in four weeks time. Several important algae can be considered in a less time and the rest of the year's work can be devoted to three phases of the work as previously outlined. All this can be handled so that the subject matter is as intelligible as is the average High School work. This general treatment is most practical for various reasons. It is mainly a study of forms that have economic significance. It gives the widest acquaintance with our plant environment. It serves as a basis for further study or work either along general or special lines. Properly handled it yields first place to no subject for training in observation, comparison and inductive reasoning. Properly arranged it forms a definite science, the first natural science in the school curriculum.



Ninebark Spirea, a native shrub.

NATIVE AQUATICS.

William Longland, Lake Geneva.

In speaking of Native Aquatics which I consider worth growing the list would not be very large. I will also give a list of some of the best hardy hybrids which I know to be suitable for this State with winter protection. There are quite a number of the small perennial aquatics that are very interesting as you find them native, but would not answer as well if you were to bring them under cultivation. I will only speak of a few of these. .

We will take the *Sagittarias*. The arrow-head lily so called by the leaf resembling an arrow head of which we have several species growing locally in shallow ponds and lakes, generally found near the edge of the water, shows up well with its arrow shaped leaves and white flowers with yellow center. *Arifolia* and *cuneatum*. are the most common. They bloom in July and August.

Pontederia cordata or Pickerel weed; this shows up also on the edge of streams and lakes, its leaf resembling a calla leaf. It throws up a single spike of blue flowers which as we do not find many blue hardy aquatics makes it more interesting.

Polygonum amphibium; a small floating perennial aquatic with nice showy pink flowers. We find it on ponds and lakes. It is nice for the edging of ponds.

Nymphaea tuberosa alba. It is one of our best native white pond lilies. Almost every one is familiar with it. It is to be found in most ponds and lakes and will grow almost anywhere in ponds and slow streams of water. We have a nice lot in tubs which I put into Wychwood Bay Lake Geneva four years ago. They do well and bloom right along and have no attention whatever. It blooms all summer and is fragrant.

Nymphaea advena,—yellow pond lily. This is another well known native and is generally found in company with its white neighbor and is a fit companion for it though not quite as good. It blooms all summer.

Nelumbium luteum. Our American *Nelumbo* or Lotus has leaves one to two feet, flowers pale yellow eight to ten inches in diameter and very fragrant. This is the grandest of our native aquatics. On August 5th I took a trip to see the Lotus beds at Grass Lake, Ill., about twenty miles from Lake Geneva. When we reached there we came in sight of them suddenly. I thought it the prettiest sight that I ever saw. The bed was one mass of pale yellow and green flowers standing out of the water about 18 inches and a breeze just strong enough to sway them about made a sight never to be forgotten. This bed is acres in extent and just as far as you can see, is one mass of bloom. Here, too, I found *Nymphaea alba* our sweet scented white water lily. This fringed the Lotus near the shore and they were as perfect as I ever saw them. Interspersed with this and the Lotus was *Nymphaea advena* our yellow pond lily but few and far between. Some kodak pictures that I have with me can give but a faint idea of the rare beauty of this scene as you must see it yourself to appreciate it fully.

Nelumbium speciosum; naturalized in ponds at New Jersey, was introduced in this country by Mr. E. D. Sturtevant. Color pink, the base of the petals white. The blending of the pink and white is splendid. They are very fragrant. It is a good companion for our American native variety. It needs protection in winter.

Nymphaea odorata rosea. Native in Mass. to New Jersey. Like our native white species except in color which is pink and a very free bloomer. It needs protection in winter.

I have a list of hardy pond aquatics which I will read which I know to be suitable for Wisconsin.

Hardy Aquatics for Wisconsin for use in Artificial ponds to be protected in winter.

Nymphaea. James Brydon. Flowers 5 to 6 in. in diameter. Color very rich crimson, reverse of petals silvery white. Free bloomer.

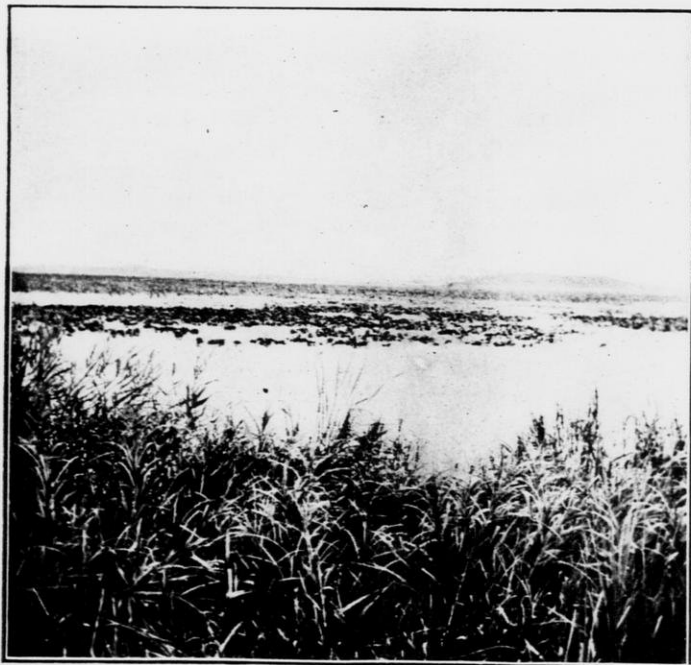
Nymphaea, *Tuberosa*, *Richardsonii*. One of the finest whites, blooms early in the morning and early evening.

Nymphaea, *Alba Gladstoniana*. The best white for our climate. The first to bloom in spring and continues to bloom until frost.

Nymphaea, *Mark Hanna*. Clear pink fine flower. Rather shy bloomer in cold summers like last summer. Good this summer. Fragrant.



Nelumbium luteum or American Lotus at Grass Lake, Ill.



Grass Lake, Ill. *Nelumbium luteum* in background.
From photographs by Wm. Longland, Lake Geneva, Wis.

Nymphaea, *Mary Exquisita*. Flesh color, very fragrant, good bloomer.

Nymphaea, *Odorata Caroliniana*. Robust very free bloomer, flowers 7 in. in diameter. Clear pink golden stamens reflecting a salmon tint.

Nymphaea, *Martineau Chronatella*. Clear golden yellow, blooms from spring to fall, one of the best.

Nelumbium, *Shiroman*. The enormous flowers are snow white, double, borne on strong stalks well above the leaves.

Nelumbium, *roseum*. Deep pink, fine flowers. Some people call it the red Lotus.

This is the remainder of 50 varieties tested in our locality and found to be the most serviceable.

DISCUSSION.

The Chairman—Can these be grown in tubs?

Mr. Longland—Yes, all of them have wintered out of doors, all that are on that list.

Mr. Smith—I would like to ask the gentleman how much water is necessary for the successful blooming of water lilies where they are under artificial conditions in tanks and tubs, how much water is necessary over the soil?

Mr. Longland—Well, that depends. We generally have the tubs about 18 inches deep, and the ponds will vary, some of them will run from six feet down to a foot, generally about three or four feet of water, sometimes on the small ones it is only about two feet, about eight or nine inches of water over the tubs.

Mr. Smith—How do you keep the insect life down in the water, the little fine bugs of various descriptions, how do you keep them from multiplying by the millions?

Mr. Tiplady—The insects in water lily ponds are easily kept in submission with minnows or gold fish and it is a good way and a sure way of destroying insect life in water lily ponds. The other enemy of the water lily is the mossy substance which must be taken out with a little fine minnow net.

Mr. Longland—That is the trouble that you get most with stagnant pools.

Mr. Smith—Is it necessary to draw the water off to change it?

Mr. Longland—It is necessary to run the water off a little, and do not use too cold water.

Mr. Smith—Would not the evaporation give you sufficient change?

Mr. Longland—No, the water has to be changed; keep a little stream, run it in every day.

Mr. Smith—What would be the effect if you did not change the water?

Mr. Longland—Why, it will scum over and it will be full of insects, just the same as you see a stagnant pool.

Mr. Smith—What do you do for this green, moss-like hair that gets into the pond? It grows under the water, the whole water gets full of it.

Mr. Tiplady—Fish it out with mosquito netting, as if you were catching minnows.

Mr. Longland—Where you drain your ponds every year you do not get that so much.

Mr. Toole—While the artificial ponds are drained in the winter, how do you care for the plants?

Mr. Longland—Cover them right there with the leaves and straw, draw the water off, or if you are near the lake, one of the best ways to do on some of them, plunge them right in the lake, six feet of water.

Mr. Toole—Perhaps you can tell us how a moderate sized tank is made, with cement sides and clay bottom, a wind mill and water from a well, can such a one be made successfully?

Mr. Longland—You could if your water was not too cold that was running into it, but spring water is one of the worst things for a water lily pond. The water must not be too cold.

Mr. Smith—There is another objection to water being too cold, it kills all the fish; give the fish a cold bath and it will kill them.

Mr. McFetridge—I would like to say something in defense of a vine that Mr. Toole mentions; I think he neglects to bring out the particular beauty of the blossom, that is the wild purple clematis. As he said, the blossoms of this vine are not particularly striking, but there is a certain very exquisite beauty about them, and a large number of them on a large vine I have seen in this town to give a very beautiful display. The blossoms under cultivation sometimes grow until I have seen them at least four inches in diameter and they have an exquisite beauty; the shape of the petal itself I think is worthy of mention. The vine is, by-the-way, I think, nearly extinct,

and I would like to ask Mr. Toole if he has found any of it recently and where it is found?

Mr. Toole—It is found over south on Devils Lake, and also down at the Lower Narrows.

Mr. McFetridge—Have you found it recently?

Mr. Toole—Well, not within the last two or three years, probably four or five years.

NATIVE EDIBLE FUNGI.

Mrs. J. E. English, Baraboo.

My interest in fungi dates from early childhood when in my play at our farmhouse I used to find them with delight and examine them with curious wonder. I found the answers from grown-ups very unsatisfactory in response to the many questions with which I plied them.

What child does not love the toadstools with their dainty and wonderful structure and marvelously beautiful coloring? They have the charm of mystery, coming and disappearing like magic, and with them are associated those enchanting creatures, fairies and those doubtful ones, toads.

About five years ago was the first that I was able to obtain books on Mycology or the science of fungi when I took up the study in a serious way and have found it most interesting and gratifying also for I now belong to the enthusiastic mycophagists (or fungi eaters) of the country. Our members are slowly growing. Many of my friends and neighbors eat them now who never used to consider them fit for food. Many bring them to me for identification and are content to take their knowledge at second hand and thus they miss the better part.

Since taking up this delightful study with its many appetizing rewards, I have often thought it a pity that there should be so little general information on the subject, and that good nourishing food for which we are all toiling should grow in abundance about us and go to waste for the lack of gathering. A large part of our vegetable life is of the various species of fungi. In Minn. there are 7,000 known varieties of plant life of which nearly half are fungi and I presume the propor-

tion is much the same in this State. It hardly seems possible that so few take an interest in them. From the time of Pliny, who was a contemporary of our Lord, they have been spoken of in history as one of the esteemed delicacies of the table and by many it is thought that the manna which fed the Israelites in the wilderness was a mushroom. Whether this theory is true or not it is certain that centuries ago they graced the tables of the Caesars, and today hundreds of varieties are known to be wholesome and delicious. The constant finding of new varieties keeps one absorbed and fascinated in the study. There is thorough intellectual enjoyment and many a gastronomic treat supremely satisfying as a reward of effort.

Any one who wishes to take up the study of Mycology should begin with the foundation and understand the subject thoroughly and not take it up in a superficial manner, for in this matter a little knowledge may be dangerous.

You have all probably observed that fungi are devoid of green-leaf. This indicates that the plant has no use for starch forming apparatus and so must get it already manufactured. Two methods have been adopted. In one the fungus derives its nourishment directly from a living plant upon which it grows as a parasite. The plant upon which it feeds is known as the host plant. In some instances the host plant is itself a larger variety of mushroom and it becomes so changed and absorbed by the parasite that it is impossible to identify the species of the host.

In the other method the fungus derives its prepared food from dead vegetable and animal products as dead trees and roots, leaf mold, bread, preserves, etc. The fungus sends its network of absorbing organs through the nourishing substance in every direction often for many feet or even yards. This is called the mycelium and the fungus growth which we see at the surface is the fruit or reproductive organ of the plant. Often a long period of time even years is required for the growth of the mycelium before the mushroom or fruit develops. Some, however, are of rapid growth as every housewife can testify for in hot weather bread does not have to be more than a week old before the familiar blue mold appears upon it.

Now I should like to explain to you the parts of a common mushroom so that we may talk intelligently about them. First comes a little ball pushing through the soil, as it grows upward it gradually expands into an umbrella shape. This is called the cap. The solid part of the cap is called the pileus

and the delicate under part arranged in dainty knife-like plaits is called the gills. On them are borne the spores or reproductive bodies. In identifying a variety take a mature mushroom, cut off the stem and lay it gills downward on a piece of white paper. After several hours have elapsed take it up carefully and there will be an outline of the gills in the spores which have fallen on the paper. Examine them with a microscope and note their color and shape carefully. About the stem or stipe is a delicate filmy ring. This is called the annulus. In some varieties the base of the stem is bulbous and has enveloping scales sometimes amounting to a sacklike sheath. This is called the volva.

In identifying a mushroom always examine the young specimens, one partly grown and one quite mature and be careful to gather it quite at the bottom of the stem, separate it there from the mycelium so that if there is a volva, you will surely know it. For the most poisonous of all mushrooms, the Deadly Agaric, to which nearly all deaths from mushroom poisoning are due has a volva. It is one of the *Amanita* genus of which there are five somewhat poisonous species and many edible ones that are pronounced to be very delicious, but in order to run no risk I think it wise and prudent to learn the family well and *reject it*.

To know and recognize the poisonous mushroom readily is a great safeguard. One rule I should make and that is to taste no mushroom which has a volva! This rule no doubt will debar one from some good varieties but it will surely keep one safe from the dangerous ones and leave still hosts of edible ones to choose from. Within a block of my house I gather nine different varieties of edible mushrooms that are quite common and of fine flavor.

The first to greet us in the spring as soon as the warm April showers come are the glistening *Coprinus*. They are small tan colored buttons but grow in such great clusters about old tree stumps of the elm and poplar that generous dishes of them can be gathered and they are a favorite with many. They continue to grow about every two weeks until the late frosts. By inspecting their habitat every morning one can have fine dishes of them often throughout the season. The genus *Coprinus* is easily identified. The spores are black and as they mature the gills deliquesce and drip a black inky fluid. In early days our forefathers used to gather them in this stage, boil them and strain off the juice to write their rare letters.

They are sort of a domestic plant and three very choice varieties often grow about our homes on lawns and tree banks where the soil is rich. The species just described the *atramentarius coprinus* and the *coprinus comatus* or shaggy mane is a very good one for amateurs to begin with. The three species mentioned are common. They are easily identified and they have a fine nutty flavor raw and are very delicious cooked in various ways.

The *atramentarius* is a larger species than the glistening *coprinus*. The caps often mature two inches across. The *pileus* is grey or slate color. The gills of a lighter shade are broad and close. The stem is usually white, hollow and short. They usually grow in clusters so closely that the caps are pressed into very irregular forms. They are so fat and solid that they always remind me of a chocolate cream. They are often found growing in potato patches in the fall.

The shaggy mane is a much more showy species. Their long cone shaped caps looks very white and stately in the green grass at a little distance. They usually grow singly and the cap does not expand until after the gills begin to deliquesce and it is unfit for use. The *pileus* is very shaggy whence it derives its name.

Of the genus *Agaricus* I gather two species, the *campestris* and the *abruptus*. The spores are purple. The *campestris* is the common mushroom of commerce. Three varieties of it are cultivated, all very similar. The *pileus* is white or brownish and the gills a beautiful pink changing to purple as the spores mature. The stem is short, stout and solid and the veil when it ruptures from the edge of the *pileus* forms an annulus on the stem which drops off in old age. For market they are gathered just before the veil breaks as they make no gain in weight afterwards but I consider the flavor much finer in more mature specimens.

The *abruptus* is not quite so large a mushroom and is very tender and fragile. The young *pileus* is a delicate buff growing brownish with age. The young gills are white and have bits of the ruptured veil clinging to them and also there are particles of it on the *pileus*. As they mature the gills grow purplish brown and the caps roll upward at the edges making them concave and irregular. They are a pleasant flavored mushroom and can be gathered often through our summer months. They usually spring season after season from some tree that has been cut down.



Willow-leaved Spirea, native.

No doubt you have all noticed the oyster mushroom which grows on the trunks of dead or dying trees preferring the elm or poplar here and shows white and conspicuous from quite a distance. It is called oyster because the bunches growing out from the trunk overlap one another closely and resemble oyster shells. They grow very large and look very inviting to a mycophagist for if gathered when in good condition and baked with a spring chicken mere words are inadequate, or they are delicious simply fried in butter.

Another tree mushroom which is easily identified is the sulphurus polyporus. It is a great yellow mushroom as its name would indicate. The upper part is in variegated shades of orange and the pores beneath (for it has pores instead of gills) are a sulphur yellow. It grows in great irregular bunches on black oak trees. It should be gathered when young and tender. A good test is to pinch a branch and if it is soft and juicy it is in proper condition. If brittle and dry it is too old. Cut in fragments. Seasoned and stewed a short time with cream and butter added to the gravy it might easily be mistaken for chicken. I have gathered a large water bucket full from one dead black oak, which would have made a delicious dish large enough to have served thirty hungry people.

The morels are among our early mushrooms. They appear only during May and June. They may be sought in wet weather in the woods under pine and ash trees and they will repay the seeker. The cap is supported on a hollow stem and its whole surface is very uneven by reason of a network of reticulated ridges and their intervening cavities. This gives the surface a pitted or honey-combed appearance. In fact they look very much like cone-shaped sponges for they are a buff color changing to tan with age.

The ridges are blunt on the surface and the spore sacks are imbedded in the whole surface. The spores also are yellow. There are several species which are all very similar. All are wholesome and of excellent flavor. This is a good genus for amateurs to take up as they are easily identified and cannot be confused with any of the harmful kinds.

The puff balls are also an innocent family. No member of this group is injurious. They should be eaten while the interior is white or a delicate yellow. The outer skin is tough and should be removed. Then half inch slices may be dipped in beaten egg well seasoned and fried a good brown. In cooking mushrooms they should be kept covered as much as possible in order to retain the delicate flavor.

Perhaps I had better stop describing these strange fruits to you or you may not be able to carry away a clear idea with you but instead sort of a potpourri as the musicians call some of their aggravating pieces in which you no sooner recognize one tune than they break off into another.

For the past two winters we have had a small bed of *agaricus campestris* in the cellar. It is easily made and a great satisfaction. Last fall I had a section of a poplar log which was producing "oysters" carried into the cellar and we had a fine supply of the most beautiful specimens several times during the winter. They looked like bunches of the most pure and beautiful calla lillies and quite lost their resemblance to oyster shells, but the agreeable flavor remained unchanged.

I hope the little glimpse I have tried to give you into mysteries of mycology may have increased your interest in what grows about you. At least I am confident you will not make the statement a young man made a short time ago. He was a well educated and intelligent young man, too. A party of us were sightseeing and noticing a number of mushrooms I asked him if he were interested in them. "No, not much," he said. "You see there are two kinds, one kind are mushrooms and good to eat, and the other kind are toadstools and very poisonous, so you better not touch any of them. I always kick over every one I come to."

He was so happy to give me this information and remembering that

"Where ignorance is bliss
'Tis folly to be wise."

for once I held my peace.

LAWNS AND SURROUNDINGS.

Franklin Johnson, Baraboo.

One cool morning in the fall when out looking to see what mischief Jack Frost had been doing during the night I was surprised to see a basin of water apparently free from ice. To make sure that my eyes were not deceiving me I took up the basin and gave it a little shake. The water was surely in a liquid state. Then Jack performed one of his legerdemain

tricks. Before I had time to replace the dish the water was frozen solid. The water had evidently become ice-cold and a slight jarring was all that was necessary to cause the formation of the crystals.

Some events in the social life of the community or of the nation are very like this sudden transformation of the water into ice. There was a time when the cemeteries in this country were sadly neglected. Go where you would north, south, east or west it was very much the same. Live stock roamed through the cemeteries at will. Cattle destroyed shrubs and trees and even broke down the old fashioned slab tombstones while swine rooted the graves. To many persons this state of things seemed intolerable. Magazine writers, editors, clergymen, platform lecturers and others sought to arouse public opinion against this national disgrace. Nothing seemed to have any effect until at the close of the Civil War the Grand Army of the Republic inaugurated the annual observance of Memorial day and the decoration of graves. Lo! A sudden transformation. The cemetery instead of being the most desolate and neglected spot became the one place in each community the protection and adornment of which seemed the personal interest of all. Some one has said that the founders of Memorial Day accomplished indirectly in a single year what the agitators by direct effort had failed to accomplish in a strenuous effort for forty years. This is a very superficial view of the case. Memorial Day simply crystalized the sentiment that had been formed during the long night of Agitation. It is within the province of horticultural societies to work along both the lines of agitation and crystalization. I might give many examples—one familiar to all of the settlers in Baraboo will suffice. When the old court house was first built it stood for years in the center of a lot otherwise vacant, unadorned by lawn or walk by tree or shrub or flower. The County Board refused time and again to appropriate a dollar for the embellishment of or the care of the grounds. At length the horticulturists in Baraboo took things into their own hands. They appointed a day for a "bee" and called for volunteers to fix up the court-house yard. The volunteers came with teams and tools, trees and flowers. They also brought the women folks along and had a picnic dinner. As a result of that day's labor behold the beautiful trees surrounding our court house. Those horticulturists builded better than they knew. Baraboo was not then the beautiful city which we see today but that day they crystalized the thought of what Baraboo should be. As

the result of the crystallized thought, the "Gem City" of the State. They also planted the seed which has done much to unify the County. The beauty of the old court house park developed a feeling of pride of County as shown by the practical unanimity with which the County joined in the building of the new court house. The work of Horticultural societies gives encouragement to individual effort. This brings me to the first part of my subject "The Lawn." You know the familiar receipt for cooking a rabbit which begins "First, catch the rabbit." We have the lawn. The home in Baraboo without the lawn is the exception, but some of these need improvement. With a view to encouraging the improvement of these lawns and other surroundings a year ago this last spring one of our public spirited citizens the Hon. Philip Cheek offered premiums for the best kept lawn, for the best kept back yard, for the best flower garden. The amount of each first premium was ten dollars and the amount of each second premium was five dollars. The conditions of the contest were published in our daily papers and there were about twenty entries for each offer. A list of the most glaring defects in the lawns thus entered may serve as a guide to the better way. Some were rough and uneven having never been properly graded. In others there were unsightly depressions where shrubs or trees had been removed. In some the turf was defective. Docks, dandelions, pig weeds and plantain can never be made to form the thick velvety sod that is the distinguishing feature of a good lawn. In the care of a lawn remember that a scraggy fringe never adds to its beauty but makes the whole look ragged. One of the most common mistakes is the use of too much water. Many lawns are scalded by being watered when the sun is shining. The making of a good lawn is a fine art and its care requires a high degree of intelligence. In the beautifying of home surroundings the lawn seems to be the foundation, the neatly kept back yard is the natural complement of the lawn, flowers the proper adjunct of both, vines and shrubs add their charm of beauty and trees give to all a crown of majesty.

With regard to planting I wish to call attention to one thing that is often overlooked. "The eye is not satisfied with seeing nor the ear with hearing," but an exquisite pleasure may come to the soul through the sense of smell. To a person living in Chicago the loss of this sense might be a positive blessing but to us who live simpler and saner lives the development of all of our faculties seems desirable. When darkness veils the



Stag-Horn Sumac, *Rhus Typhina*, showing growth of a single season.
The Sumacs tend to become bare at the base with an umbrella-like top. When used in borders the stems should be cut close to the ground each spring.

beauty of the flower from the eye then the flower asserts its loveliness by its sweet fragrance. Some of our most beautiful native trees and vines and shrubs have this desirable quality in a marked degree. Among them I would mention the thorn-apple, wild crab apple, the wild grape vine and the basswood.

This improvement of home growth is well enough in its way, but there is a lot of work about it. Does it pay? It is an admitted fact that every man's home is to a greater or less extent an expression of his character. A shrewd observer can usually tell a man's nationality by looking at his home. There is another side to this fact. These homes are not only expressions of character they are forming character. Let me give you a definition of a model citizen. The model citizen is he who has a just pride in his country, in his state, in his county, in his town, in his school district and in his home. Is it not worth time and work and money to stimulate this civic pride among the citizens of this great commonwealth?

DISCUSSION.

Mr. Hirschinger—Will you tell us how to get rid of dandelions in the lawn?

Mr. Johnson—The best way I know of to control this enemy is to sow plenty of grass and it will help to check the dandelions or anything else. Dandelions are not the worst thing in the lawn that can possibly be; in the early spring when blossoms are scarce, they look kind of cute, these dandelions sticking up; still, the fellow who has the care of the lawn never seems to think that way.

Mr. Tiplady—What grasses do you prefer as a grass mixture for a permanent lawn, what variety of grasses?

Mr. Johnson—Really, I do not know; there are so many mixtures on the market that are good.

Mr. Toole—In regard to this matter of mixture for the lawn, it reminds me that the white clover and blue grass usually will stay by you; a mixture may be desirable for the first year or two to make a quick growing close sod, but the blue grass and the white clover is what it will come to finally, the rest of the grass will disappear.

Mr. Crossman—I would like to know if the blue grass is any different in any way from our own June grass?

Mr. Toole—What we commonly speak of as blue grass or Kentucky blue grass is our ordinary June grass.

The Chairman—What would you suggest for a lawn, for the best lawn effect?

Mr. Tiplady—For quick effect, the Kentucky blue grass, red top, white clover and Rhode Island Bent. The Rhode Island Bent has to be sown often. Do not plant grass under a tree, as it will not grow under a tree.

Mr. Tiplady—What are your methods of fertilizing a lawn, annual dressing?

Mr. Johnson—I speak from observation; it always seemed to me one of the best things to use was bone dust, although common stable manure is often used and it makes an excellent lawn, applied in the fall and removed in the spring.

Mr. Tiplady—The objection I find to stable manure is that the ground must be frozen before you can drive on with the team, and the first little sunshine in the spring, a warm shower of rain that comes, softens the frozen particles, the moisture mixes with the manure and the juices of the fertilizer run down hill because they cannot enter the ground which is still frozen, so I would like to say a word in behalf of commercial fertilizers. Commercial fertilizers, especially bone dust, blood and bone and pulverized sheep manure are the best methods of fertilizing a lawn, for the simple reason that they possess the qualities necessary and they are available at all times of the year. After your lawn is thawed out in the spring and the grass commences to grow, these commercial fertilizers can be applied and they will not wash away, they will wash right in and work where we want them, so I for one advocate the commercial fertilizers.

The Chairman—About how much per acre, or quarter acre?

Mr. Tiplady—That depends on what you use. If you use blood and bone, use about 400 pounds to the acre.

Mr. Toole—Would you recommend a combination of all that you have mentioned, or would you be satisfied with the sheep manure?

Mr. Tiplady—I have much pleasure in recommending the pulverized sheep manure. It is a mechanical fertilizer in the first place, consequently I recommend that. But I have an idea that the lawn likes change, as we do, about every four or six years, and I would suggest using blood and bone a few years, just changing off to another equally good commercial fertilizer.

EVENING SESSION.

IDEALS IN HORTICULTURE.

Prof. E. P. Sandsten, University of Wisconsin.

It is refreshing to turn away, if for a few moments only, from the conquest and worship of the Almighty Dollar, to the contemplation of Nature and her many children. We have developed into a nation of gold worshippers and in every province of enterprise and labor the desire for wealth is so overmastering as to silence our higher aspirations and feelings. Even horticulture, which is generally looked upon as an ideal occupation is becoming contaminated with the same evil, and so my plea to-night is not for commercialism in horticulture, but for ideals in horticulture, the same ideals that have inspired our artists and idealists, ideals which are to stand for better and happier homes and contented people. If you seek wealth for wealth's sake, turn your face from horticulture. Try politics, banking, oil, brokerage, mining, "bucket shops" or some confidence game. Horticulture will give you an honest living, a decent burial, and a sweet memory to your remaining friends. It will give you besides these, the blessings of an out-door life, health and long life. You will not have to eat crackers and milk for your morning, noon and evening meal, nor need you walk the dewy grass before breakfast for your stomach's sake. You will have no occasion to endow libraries so as not to die rich. You will not be asked to dine with kings, nor sit at the table with monkeys. Your life will be calm and serene, for it will be a life for study, surprises and rest. Your mind will not be continually rent by worries about your business, the fall and rise of stock and securities, nor will thieves be tempted to break in and steal your treasures.

That horticulture is an ideal occupation for man, as well as woman, is attested to by the fact that it was the first work given the race by the Creator, and horticulturists today are as eager as ever to eat of the tree of knowledge, a fact, which would indicate that horticulture and thinking are closely associated. There are such things as combining business with pleasure, and when this is legitimately done, we have the ideal as well as the profitable side satisfied. The signs of the times seem to indicate that horticulture in its broadest sense is be-

coming more and more an occupation for all classes of people. Modern journalism is doing pioneer and missionary work in this direction, and it is surprising indeed, that during the last three or four years a number of very high grade publications have been started, extolling the pleasures and beauties of outdoor life, as work beneficial to the city, as well as the urban dweller. We may confidently expect that through the influence of these publications, many city converts will be made to horticulture and that horticulture itself will enter upon a broader and higher plane.

The artistic or the ornamental side of horticulture has suffered in America and we are just beginning to awaken to the value of decorative horticulture. In the past we have been too absorbed in the pioneer life incident to the development of a new country. We have been pre-occupied in the establishment of homes and farms and have had little time to think or to act upon any feeling or aspiration, which we may have had to make a home more attractive and hospitable. But we have reached a time in our national existence where this phase of our development must be emphasized. Blessed with an abundance of land and resources to develop the same, there is no reason why every city and village in our land should not have ample parks and play grounds. There is no reason why the city streets need to be narrow and crowded, nor the back yards the depository for everything that is useless and unsightly. It is hard to understand why the builders of cities and of towns should have been so blind to the future interests of the inhabitants as to lay out narrow streets and crowded squares, when land is cheap and abundant. Then, too, it is difficult to understand why cities have not long ago appropriated larger areas for the development of extensive park systems. In large, populous centers, the acquisition of land is becoming more and more difficult and expensive, if not impossible, but in our smaller cities, cities like Baraboo, where land is still cheap, the city should not delay in acquiring sufficient areas for parks and play grounds to serve for generations to come. It will never be any easier and cheaper than now, and if any one of you wish to build a monument to your memory, I know of no better way than to donate a section of land to your city for park purposes. Such a monument will be more enduring and more beneficial to the future inhabitants than the endowment of a library or a public institution of learning. We are a missionary people—we are willing and anxious to spend millions of dollars for the conversion of supposed heathen in foreign lands, but we often forget that



A border of Common Elder, Tenney park, Madison.
This and the following illustrations from Bulletin No. 108, Univ. of Wis. Agr. Exp. Station.



charity begins at home. There are millions of children and grown people in the crowded tenement houses in our large cities who have never tasted the real pleasures of out-of-door life. Crimes of all kinds and degrees flourish in the crowded cities and what else could we expect—there is nothing for the mind to do but to brood over their own conditions. Give them a chance to get acquainted with nature, with trees and flowers, and a new vista of life will suddenly be open to them. To alleviate and better conditions like these is real missionary work.

I would not have you understand that it is the city dwellers alone who neglect planting fruits and flowers. As a rule, the farmer is one of the last to provide his family with a liberal supply of fruit and flowers. It is not an uncommon sight to see farmers purchasing vegetables and fruits on the city market.

There is a great deal in the saying that we live to eat. Eating, indeed, should constitute one of the pleasures of life, and the farmer of all persons is the one who has the right to enjoy the fruits of his fields and his gardens. It is true that a large proportion of our farms have fruit trees planted on them, but this planting is often due to no special desire on the part of the farmer himself, but rather to the persistent effort of the ever present nursery agent. And for this work he is entitled to a great amount of credit.

The horticultural work on the farm is generally delegated to the women of the family, as if it did not require any hard work. It is true that gardening ordinarily requires less physical labor than general farming, but it is also true that it requires more brains, and for this reason I should judge, if for no other, it is delegated to the gentler sex. If the same amount of work were expended on an acre of orchard as is expended on an acre of corn, the profit from the orchard would be ten-fold that of the corn.

There is need of a decided awakening among farmers to the proper appreciation of things beautiful. There would be fewer young men and young women leave the farm if the farm surroundings were what they ought to be. The early impressions are the most lasting, and if the children be taught to appreciate and love flowers and trees and their nature, it would furnish a source of inspiration and knowledge, which is now so often lacking. You can hardly blame the young man for leaving the old homestead after years of hard work, without prospect for any enjoyments or home attractions. There

must be time on the farm for recreation and for the enjoyment of such pleasure as a farm can afford. The farm must offer something else than drudgery if it is going to attract and hold the future generation to the soil.

When we consider that a lily has to spin and toil, even if Solomon said that they did not, when it has its trials and tribulations, it has to search for its food, or it has to suffer for lack of water, or sunshine, or for any of the conditions which are essential or beneficial, that its suffering, though we cannot measure it, must be perhaps as keen and as great as that of an animal, I am not to argue whether they are intelligent; they may have an intelligence, although lower than ours, or lower than animals, but I want to impress you with the fact that the difference between animals and plants is not as great as we suppose it is, and the very fact that animals and plants are so closely related should encourage horticulturists and all lovers of Nature to get better acquainted with them.

CIVIC IMPROVEMENT.

E. T. Mische, Park Superintendent, Madison, Wis.

Parks and their attributes as a phase of city improvement will be the subject under discussion in the following remarks.

Every peaceful community is normally governed and regulated by laws. Under these laws it becomes the office of a communal government to not only serve the interests of the individuals composing the community by policing, constructing streets and similar necessities which become apparent at an early stage of its life but an individual may reasonably expect that the township may properly provide such means for protection and enjoyment as a wise disbursement of public funds will permit.

Granted that this premise is correct let us inquire into the needs of a city.

Parks, their related properties and recreation areas in cities are necessary to facilitate traffic, offer wholesome and edifying means of exercise for the general populace and alleviate the causes which result in the needs of maintaining penal and charitable institutions.

Large cities require parks as a necessary component in sustaining their wholesome vitality. They are not necessary for such purposes to a village when suitable, quiet and pleasant outdoor retreats are ever present and to be found in abundant degree within a few minutes journey from the center of the village. But their advantages are self apparent and desirable. Their possession by the public for its own free right of use facilitates the perpetual preservation of characteristic, beautiful and valuable natural features of the locality. If a city can afford it there are many and excellent reasons why its wants should be supplied.

On the assumption that a city can afford and wants parks or that it has been demonstrated to be a wise financial policy to foster its scenic treasures what are the possibilities?

Every locality has interesting and peculiarly individualistic natural distinctions; some have a lake or river shore, others a specially choice flora or geological formation and practically all have a topography suited to be accented and developed with marked aesthetic advantage. Given any one or several in combination of these advantages the framework of an excellent park possession exists. Unite such circumstances with the improvement of connection links of passageways be they country lanes—and how beautiful they are! of village streets with its ordinarily commodious home grounds surrounding each residence, a building limit whereby the tree lined streets appears pleasantly spacious and there again one of the main essentials in a system of park holding exists.

Every city has its public building such as town hall and schools; contemplate what a dignified grouping these would compose if they flanked a liberal open space to be used as a park or common!

A city's needs is a progressively increasing one. As it grows its park needs increase. A city may be extravagant in the disbursement of its funds for park purposes by acquiring land too far ahead of its needs thus losing more in interest charges than would offset the added cost of the same area at a later period. It may likewise delay so long as to require a heavy penalty being paid for the delay with the added disadvantage that the property acquired will be smaller than needed or that essential parts of it are virtually impossible of acquirement. But the probability of such occurrence in village life are so remote as to be virtually non-extant.

It remains, however, that every city or village can afford something more in public open areas than roads and streets.

Whether it possesses them remains for the community to determine. Every public work is an unmistakable reflection of the community's life, aims and character. Let it be emphasized that it is unmistakable. Observe its streets, public and private architecture and general upkeep of its homes and public properties. If there is poverty or slovenliness in its people it will be evident in the streets and homes; sham at home will show itself in public construction work; intelligence, orderliness and human sympathy will indicate itself by refinement, substantiality, dignity and public pride in the community. Mark you, the works of a community are a very good indication of the individuals composing the community, not what these individuals would have the general public believe them to be.

The innate human fibre composing the fabric of normal American citizenship and American community life responds feelingly to a display of beauty. And if so be it, why, it may be asked is not the wealth of loveliness abounding throughout the State more generally known and fostered.

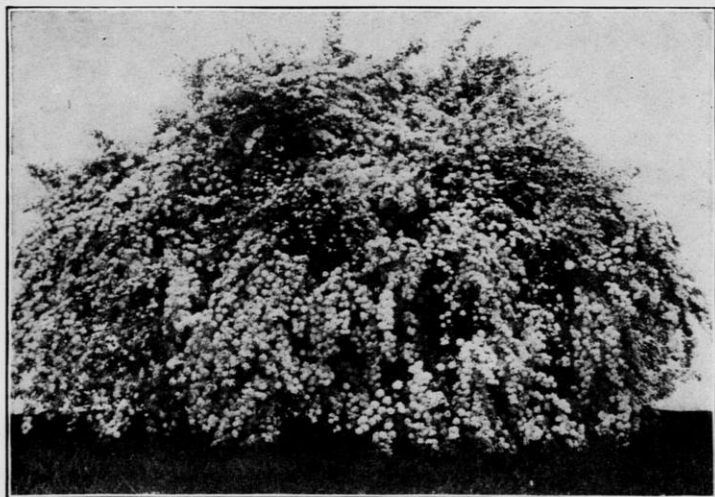
Wisconsin is an Elysium of loveliness containing myriads of lakes with water wonderfully pure and wholesome, streaked with rivulets coursing through banks of greenery. Exceedingly interesting in general surface conformation and marsh, dale and upland scenery and as a whole composing a landscape of wondrous beauty it is deplorably unfamiliar to most Americans. To those privileged to enjoy and reside amid this beauty the query is: what is being done to protect it from defilement and preserve it for future generations? Following in the wake of human settlement there is a destruction of scenery certain, inevitable, and necessary according to our present day modes of life and manners of civilization. In conserving and fostering beauty it is to be borne in mind that every locality has a peculiar distinctiveness in something native. To select the essence, the type species of such possessions, and adapt it to withstand the strife continuously operating toward change and cause it to serve the needs and desires of the community economically, thoroughly and satisfactorily is the primary motive in the establishment of outdoor areas notable for their excellence and valuable scenery.

Selection of areas:

In the selection of areas there should be as little duplication of the same types as possible. Each area should have individuality when developed. Size alone does not necessarily indicate merit, indeed it is often possible to develop a more valu-



American Ivy, *Ampelopsis quinquefolia*, used as a porch screen.



Van Houten's Spirea.

able park on one hundred acres than on one twice that size, likewise waste land is frequently better adapted to park development than more expensive property.

Parks and related areas should be selected with a view of their development; a charming woodland when made accessible by suitable approaches and usable by necessary conveniences may be decidedly commonplace whereas a slight extension of another location at the time decidedly tame and uninteresting in comparison may be stupendously more valuable as park property when developed.

In the selection of sites, the determination of their boundaries and in the preparation of a general scheme of development the best procurable advice should be enlisted if the net returns shall be at all commensurate with the possibilities.

The proposed development should fit the ground.

It is well to bear in mind that parks are scenic grounds and to make that scenery conveniently and agreeably accessible, construction work is necessary. But in a naturalistic domain drives and walks are at best necessary evils and their localities are, therefore, of extreme importance if with age the parks are to increase in value.

During the past quarter of a century wonderful progress has been made in park development and yet there is a deal to be desired in park construction. Any public undertaking involves the exercise of business methods and when applied to parks—primarily works of art—it requires unusual talent to realize when for art's sake a given expenditure is worth while or imperative and when and where an aesthetic sacrifice may best be made to reconcile the project with the business phase of the problem.

When it is recalled that the determining officials of park projects are usually active, successful business men it is easily conceivable that the work may easily assume complexity. They have, usually good practical business judgment, a good imagination, broad sympathies, forceful will and admirable intuition. Altogether they are excellent judges of market values in commercial commodities or problems. Yet it not infrequently happens that in park work their judgment is faulty since they are prone to judging too much on immediate results or on the effect produced for and on the present populace. An error of that sort may lead toward serious complications calling in its last stages for radical and difficult readjustments.

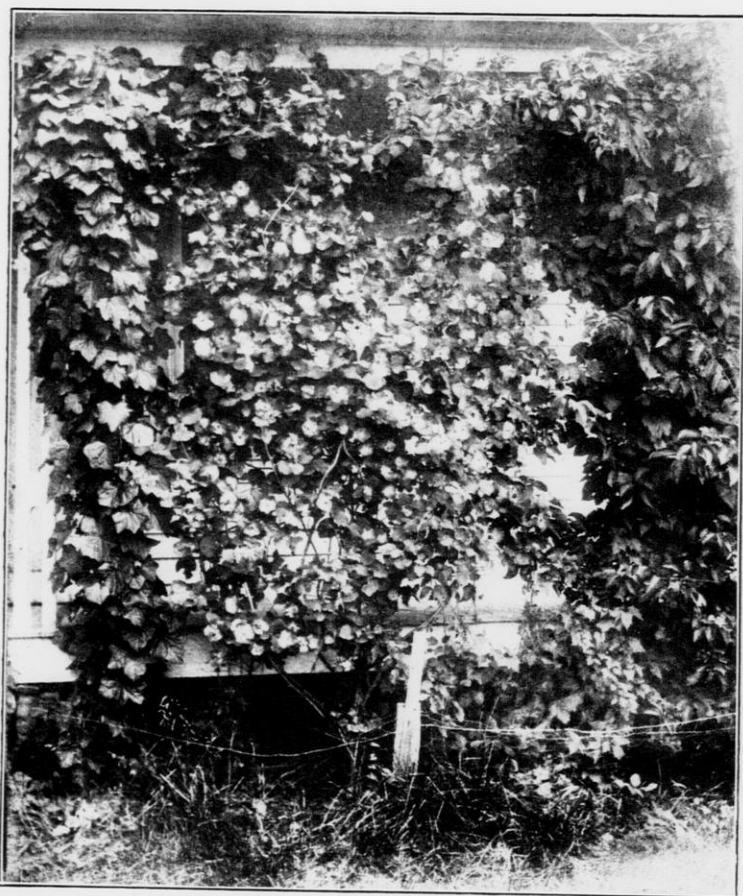
In park work the motives of many parts of a design are not apparent for a considerable period after the work is apparently

finished. Some provisions as seen alone present no specially dominant appeal but are included for their general relation with other parts. Although possessing great ultimate value as a whole a business man is often led to ignore or with slight consideration brush aside by his decisions such features of extreme potential value because to such a mind it is vaguely or not at all apparent at the time.

How to acquire.

The method of acquirement of property may be by an appointive body with power of trustee thereby enabling it to accept gifts and administer affairs in the public's behalf. In the personnel of such a body will largely rest the success of the project. The capacity of its members to reconcile conflicting interests, to act with a forethought and judgment that time stamps with approval, to progress, create and add momentum in its course requires persistent application during a long series of years if any material advances are to be made. There will inevitably be losses, failures, wastes and other irritating drawbacks but in the end the result will be accomplished if only a single individual assumes the initiative and is supported in his acts by a community who really want what such an agent endeavors to secure.

But this has reference specifically to a thorough-going, advancing park development. The policy of park improvements may start very modestly. Every locality has suitable areas of large potential park value. In the ordinary course a town provides and maintains streets and ways because its business interests demand them or the owners of land desire them located to best suit their individual holdings or by virtue of a simple rectilinear system of subdivision the titles of respective lots are more easily described and recorded. That it is frequently possible to increase the value of individual owners' property while adjusting communication ways with nearby scenic areas is not so generally appreciated as it may be. Where it is the town needs to incur no additional expense for park drives over what it otherwise would if parks did not exist. Such a circumstance may be specifically pointed out in this convention city. Traverse Second Ave. to the river and a roadway is encountered which with proper attentions of a comparatively minor sort in the vegetation and grading would secure an excellent park drive. Or endeavor to gain access to some of the riparian views of the Baraboo River and it is learned that a specially handsome aspect is inaccessible by reason of private property intercepting the route or a detour



From left to right, Moonseed, Climbing Honeysuckle, Bittersweet,
all native vines. From photo by W. A. Toole, Baraboo.

through circuitous and ordinary village streets becomes necessary and thereby detracts from, or totally loses the park advantages.

Or endeavor to mount the eminence just north of the business center of the village from whence a highly valuable and excellent outlook over the town toward Devils Lake and upon the lovely panorama is to be gained and note the awkward and steep ascent of the approach road. That hill top made conveniently and pleasantly accessible is of such aesthetic value to Baraboo that only wonderment can be expressed as to how the town could so long afford to neglect its opportunities. Again, a nearby geological formation of particularly interesting beauty is the mecca of many pilgrimages by students and lovers of the beautiful everywhere. To design a pleasure drive connection between Devils Lake and Baraboo is essential to the full appreciation and proper utilization of the scenic possibilities of this locality.

Caution is desirable in initiating park projects. There is danger of attempting too much at the start or in being ill advised. If the scenic assets of a community are to be utilized, their possession really appreciated and made useful it will be an incentive to greater subsequent exertions for extensions.

It is desirable to gain general support in a project of this sort and to this end a general subscription list is of value. Touch a man's pocketbook and you have his attention. Continue to do so annually and you have his interest and with that it requires but a proper administration in the economical conduction of the work and the result secured therefore to turn such an one to an influential and needed supporter. See to it that subscribers are well informed as to the progress and details of the work, stimulate each one to share in the expense according to a proportionate capacity, enable each one to satisfy himself that there is a close and satisfactory accountability of receipts and disbursements and the work conducted judiciously and economically and the means of support will be forthcoming in any live intelligent community.

As an incentive to a general civic pride, a wholesome public sentiment, progressiveness and a stimulant to procuring pleasure in life this mode has been amply demonstrated as being practicable and successful.

It is well to bear in mind that the way to get started is to start. To debate too long on pros and cons consumes energies without result. Do something and in the course of your activities allies will appear to assist by their counsel, means and other necessities.

If no other more important operation can be undertaken, let everyone start and plant shrubs and trees on their home grounds or make a sample of a block. Display the effort for improvement and it will be the cause for promptings and directions toward what is proper.

There is opportunity for each individual to exert himself be it ever so humble. If the desire for improvement is really sincere and general the public activities may be conducted by a special body.

DISCUSSION.

The Secretary—I wanted to add two or three thoughts on Mr. Mische's paper. One was the question as to when is the proper time to select park areas. Baraboo has little or no park area, no public grounds that I know of. It is time for you to start at park work? You *have* no public grounds, do you *want* public grounds, do you expect to be of such a size that you will need them. Of course in a village or small city pleasure grounds and the country are right near at hand. This is a question you should ask yourselves at this time; Are you ready, and if you are, all the other things will come. And in that connection I wish I might have permission to say a few words about Madison's system of parks. I cannot do justice to so large a subject, and yet I think the conditions in Baraboo and many other cities are similar to those in Madison fifteen years ago. Fifteen years ago there were no public grounds in Madison with the exception of the capitol grounds, and a deserted cemetery called Orton Park. At the present time we have thirty miles of drives and about 200 acres of park grounds and playgrounds which requires the sum of about \$14,000 a year to support, and it has required the expenditure of about \$170,000. Now, I might outline that briefly to show you how it began. It began by the extension of the University drive across marshy land to some country roads beyond. That was certainly a modest beginning. I think I could say here now, and I may perhaps repeat it, that the park system and the drive system are due very largely, if not wholly to the energy and the unceasing work of one man. We have just one man there who started that thing and carried it through in spite of every form of opposition. If you are going to accomplish anything in Baraboo you have got to find one man to make the start, who is willing to give his time and money and energy to carry that through. We have that man in Mr. John M. Olin, and Madison owes him a debt it never can repay. He saw the possibilities of an extension of this drive, he solic-

ited subscriptions of \$5, got a few subscriptions and the work was extended slightly, by degrees. Nothing was done by the city of Madison, everything was done by public subscription. Fortunately the beginning was at the time of the bicycle craze. Everybody who had a bicycle and who was interested in good bicycle roads gave \$5, and people who had carriages gave \$5 more. Mr. Olin gets everything he wants and now we are getting our contributions in \$10,000 chunks. The most important work is the development of park areas, not from valuable land, but from waste land. We are creating our parks along the sloughs around the lakes; they have been an eye sore and a nuisance so the shore rights are secured at a comparatively small sum, and a dredging company is hired to dredge and fill in that area and several parks have already been created and other parks will follow.

This will probably not be of special interest to you, except it in one sense applies to your city. There was a time when we had nothing; now we have a great deal. If there had been no one to start, if one man had not said, "This thing can be done and it shall be done," we would have been parkless today, and we have the finest park system and the finest drive system of any city in the northwest of its size, and it would gladden Mr. Tiplady's heart to be in one of our Madison parks and find that all of the planting in that park is of native plants; there is not an exotic in that park, and nearly all the planting on our driveways is of native plants. And there is a river connecting the two lakes on which Madison is situated that had been practically a dumping ground for fifty years until it was an eye sore,—whenever the citizens of Madison passed out of the city on the railroad they shut their eyes—eighty thousand dollars has been expended in dredging and parking it until it is now a beautiful part of our park system. All these things can be accomplished in proportion in Baraboo or any other city of the state; if the people of the city will it, there is no question about money. There is plenty of money in Baraboo, as there is in every other city if you go at it right and get it.

Mr. McPetridge—Mr. Mische in his paper calls the attention of the citizens of Baraboo to the fact that we have not made much of our natural possibilities; I think we ought to take that into consideration. Of course it is quite a criticism, but I think we ought to receive it with good grace. I think he is quite right in saying what he has. It is not altogether due, this not making enough of our natural possibilities, it is not due to us today perhaps so much as to those who origin-

ally laid out the town. Of course that was done many years ago, it cannot now be helped. It has often been a great source of wonderment to me why, in laying out towns the surveyors, or men in charge should pay so little attention to the natural features. We have, for instance, our river here which is called the Baraboo river, and which is the one main and largest feature of the city, and with reference to it there have been no plans laid out, as the paper very well calls attention to. I think at this time I should like to bring before the people in connection with this paper the possibilities in this direction.

Now, we have had some little talk, the papers have had more or less to say about a Baraboo City Park. It seems to me in our conception of a city park we ought not to begin in a very small way. I had some time ago a long talk and a long walk with Mr. Olin, down on one side of the river and back on the other side, and he showed me very conclusively why we ought to, if we ever do anything about the matter, take in the entire river system and not content ourselves by laying out a little square plat of ground somewhere and doing a little meager park work somewhere and not large enough in its conception. Now, by laying out the entire river system in a broad way, we need not spend any large sum of money to begin with, but by obtaining all of it we can gradually, as years go on, bring the thing into a high state of cultivation and it seems to me it would be of a very great value, not only to the city, but to all the people.

Mr. Toole—Those who live outside of the corporation should be interested in all that goes on in Baraboo, and certainly there is no place that I know of where it would seem as though the spirit of reciprocity were stronger between those of the country and city than has been here manifested in the extension of the city streets; the city and the country have united in the work of the improvement. We see the influence of the city reflected, as mentioned today, in the lawn mowers and the appearance of the farm lawns and it seems as though it were not out of place for those outside to feel an interest in the city and express an opinion about it, and for years many of us have looked on and wondered when Baraboo would have a park, because I think it would reach way back to the memory of the oldest inhabitant when a park was first talked of, yet the opportunities have been closed the section which was looked on for a park was finally divided up into city lots, and that dividing up into city lots and acre property is going on so

rapidly that we are coming I think very near to the close of opportunities in Baraboo for anything in the way of a park that will be universally accessible, so that in the course of not many years you will have to have a park so far out that you will have to drive to it. I hope that some action will be taken and that the people of Baraboo will be wakened up to the present opportunities and the possibility of losing those opportunities. I do not see why a very few might not get together, call themselves a park association, say what they will subscribe simply for a nucleus to draw others in and increase the size of the association, more clearly define its intention and more nearly look up its opportunities. There you will have a beginning, and I think in that little gathering of people somebody, perhaps not a John Olin will develop, but several perhaps will be brought forward who will push the work and it will not be very long before you will see means in sight for securing your grounds. We have beautiful drives in all directions, so that if the roads are in condition at all to drive on the outing is pleasant, and yet after all, if we get the 10,000 city which we hope for, there will always be the time when there will be need of something near by that you will not be obliged to take long drives to enjoy the beauties of nature.

Following this discussion Mr. Wm. McFetridge of Baraboo spoke at length of the proposed State Park at Devils Lake.

The Secretary then offered the following resolutions which were unanimously adopted.

RESOLUTIONS.

WHEREAS, There is a movement now on foot to induce the State of Wisconsin to establish and maintain a State Park at Devil's Lake, and

WHEREAS, The project to preserve for all time this beautiful region, now threatened by destruction, appears a commendable one which should receive the support of every citizen of our state, and

WHEREAS, From a Horticultural standpoint, the preservation of the region is particularly desirable, since it includes and primarily is for the protection of the flora and for its increase and development,

Be it Resolved, that the State Horticultural Society this day assembled, unanimously declares itself in favor of the said project and endorses it, and

Be it Further Resolved, that this society recommends that the next session of the legislature appropriate a sum sufficient to purchase and set aside this region to be used and maintained as a State Park, subject to the state laws, and open to the use and enjoyment of the people of the state, for this generation and for the generations to come.

Baraboo, Wisconsin, August 29, 1906.

TRANSACTIONS SUMMER MEETING.

Baraboo, Wis., Aug 29, 1906.

The following amendment to Art. V of the Constitution was adopted:

The members from the several congressional districts shall be chosen by the delegates of their respective county and local societies, present at the annual meeting of this society; or in case of the absence of delegates from such societies or in case of failure to elect, such members shall be chosen from among the members of this society present from such districts. But if any district is not represented, the vacancy shall be filled by vote of the members of this society present at the annual meeting.

On motion of the Secretary, the following were made honorary annual members of the Society: Hon. E. G. Marriott, Mayor of Baraboo, Mrs. J. E. English of Baraboo, Mr. A. B. Stout of Baraboo and Mr. Wm. McFetridge of Baraboo.

On motion of Mr. Toole, a vote of thanks was extended to the Choral Union of Baraboo for music furnished at the evening session.

Adjourned.

PROGRAM.

Baraboo, Aug. 29, 1906, 9: a. m.

Invocation.

Words of Welcome, Hon. E. G. Marriott, Mayor of Baraboo.

Native Ferns, William Toole, Baraboo.

Some Native Flowers Worthy of Cultivation, Dr. E. Everett, Madison.

2:00 p. m.

All the Native Shrubs Worth Planting, John Tiplady, Lake Geneva.

Native Vines for Shade and Ornament, W. A. Toole, Baraboo.

Native Aquatics, Wm. Longland, Lake Geneva.

Native Edible Fungi, Mrs. J. E. English, Baraboo

Lawns and Surroundings, Franklin Johnson, Baraboo.

Practical Botany, Prof. A. B. Stout, Baraboo.

Evening.

Address, Prof. Sandsten, University of Wis.

Civic Improvement, E. T. Mische, Park Supt., Madison.

PREMIUM LIST.

Garden Flowers.

	1st.	2d.
Best display Comet Asters	\$1 00	\$0 50
Best display Branching Asters	1 00	50
Best display Dwarf Asters	1 00	50
Best display Asters in extent and variety....	2 00	1 00
Best display Single Dahlias	1 00	50
Best display Double or Show Dahlias.....	1 00	50
Best display Cactus Dahlias	1 00	50
Best display Perennial Gaillardias	1 00	50
Best display Gladioli	1 00	50
Best display Perennial Phlox	1 00	50
Best display Pansies	1 00	50
Best display Stocks	1 00	50
Best display Sweet Peas	1 00	50
Best display Single Petunias	1 00	50
Best display Double Petunias	1 00	50
Best display Verbenas	1 00	50

Best display Cosmos	1 00	50
Best display Garden Flowers not enumerated in above list	1 00	50
Best, most artistically arranged bouquet of Gar- den Flowers	1 00	50

Potted Plants.

For Amateurs Only.

Best Fuchsia	1 00	50
Best Rex Begonia	1 00	50
Best Tuberous Begonia	1 00	50
Best Begonia other than above	1 00	50
Best Gloxinia	1 00	50
Best Sword Fern	1 00	50
Best Fern other than above	1 00	50
Best Asparagus Plumosus	1 00	50
Best Asparagus Sprengeri	1 00	50
Best display Geraniums	1 00	50
Best display Coleus	1 00	50
Best collection Potted Plants	1 00	50

Wild Flowers.

Best display Golden Rod	1 00	50
Best display Asters (native)	1 00	50
Best display Native Ferns	2 00	1 00
Best, most artistically arranged bouquet of Wild Flowers	1 00	50
Best display Ornamental Wild Fruits	1 00	50
Best display Native Fungi	2 00	1 00
Best collection of Wild Flowers in arrangement and variety; the different varieties to be shown separately	3 00	2 00
Sweepstakes to be awarded to the exhibitor re- ceiving the largest number of first premiums	3 00	

Fruits.

Apples.

Best plate Astrachan	1 00	50
Best plate Early Harvest	1 00	50
Best plate Early Joe	1 00	50
Best plate Oldenburg	1 00	50
Best plate Tetofski	1 00	50
Best plate Transparent	1 00	50

Plums.

Any variety named in Society Fruit List, 1906 50 25

Specimens of plums must be fully colored and ripe enough for culinary use.

Four apples to be shown for a plate.

In plums not less than ten specimens shall be considered a plate.

REPORT OF COMMITTEE ON AWARDS.

Your committees appointed to award premiums would respectfully report the following awards:

Fruit.

Apples—Red Astrachan, Wm. Toole, First Premium.

Duchess, A. D. Brown, First Premium.

Yellow Transparent, A. D. Brown, First Premium.

Plums—Forest Garden, Wm. Toole, First Premium.

Quaker, Wm. Toole, First Premium.

Abundance, Wm. Toole, First Premium.

Lombard, Wm. Toole, First Premium.

We also find that Mr. A. D. Brown has made a fine exhibit of several other varieties of apples, and among them the Saxonian and Lowland Raspberry, and we would recommend a premium of \$1.00 for each plate.

We also find a very fine plate of Peaches exhibited by A. D. Brown for which we would recommend a premium of \$1.00.

We also find a very fine collection of Plums by Wm. Toole, several varieties not enumerated, in the Recommended Fruit List, including 4 plates of seedlings of very good quality.

L. H. PALMER,

L. G. KELLOGG,

Committee on Fruit.

Premiums on Flowers Awarded at Summer Meeting, 1906.

Comet Asters, William Toole, 1st.

Branching Asters, Mary Sansum, 1st; William Toole, 2nd.

Dwarf Asters, Mary Sansum, 1st.

Asters, extent and varieties, Mary Sansum, 1st; William Toole, 2nd.

Double Dahlias, Mrs. L. Helm, 1st; Mrs. Frank Berkley, 2nd.

- Gladioli, William Toole, 1st; Mrs. Helm, 2nd.
 Perennial Phlox, Mrs. Helm, 1st.
 Pansies, William Toole, 1st; Mrs. Berkley, 2nd.
 Stocks, William Toole, 1st; Mary Sansum, 2nd.
 Sweet Peas, Mrs. Wilbur Cowles, 1st.
 Verbenas, Mary Sansum, 1st; Mrs. Arnott, 2nd.
 Cosmos, William Toole, 1st.
 Garden flowers unnamed, Mary Sansum, 1st; Mrs. Arnott,
 2nd.
 Boquet Garden Flowers, Mrs. Arnott, 1st; Mrs. Helm, 2nd.

Potted Plants.

- Fuschia, Mrs Arnott, 1st.
 Tuberos Begonia, Mrs. Arnott, 1st.
 Begonia any other variety, Mrs. Arnott, 1st.
 Asparagus Plumosus, Mrs. Berkley, 1st; Mrs. Cowles, 2nd.
 Asparagus Sperengeri, Mrs. Berkley, 1st.
 Display Geraniums, Mrs. Arnott, 1st.
 Pot plants, collection, Mrs. Arnott, 1st.

Wild Flowers.

- Golden Rod, Mrs. Cowles, 1st.
 Collection wild flowers, Ruby Berkley, 1st; Mrs. Helm, 2nd.
 Sweepstakes, Mrs. Arnott, 1st.

Extra.

- Native Fungi, special mention, Mrs. English.
 Ornamental Wild Fruits, Mrs. Cowles, 1st.
 Display Garden Flowers, Mrs. Helm, 1st; Mary Sansum,
 2nd.

W. J. MOYLE,
 AXEL. JOHNSON,
Committee on Flowers.

Transactions of the Winter Meeting

TUESDAY—EVENING SESSION.

Madison, Wis., Feby. 5, 1907.

The meeting was called to order in Guild Hall at 7:30 p. m. President T. E. Loope in the chair.

REPORT OF SECRETARY CRANEFIELD.

The year 1906 will be noted in history as one of unexampled prosperity in the commercial and industrial world. In the annals of our Society we may also write 1906 as a banner year. Our work has progressed along the lines laid out at the beginning of the year without serious interruption. Our membership has increased to a very gratifying extent and better than all else our influence for good is being felt and recognized throughout the state and the United States.

Our constitution declares that the object of our Society shall be "the advancement of the art and science of horticulture throughout the state." Liberally construed this may mean dissemination of information in all the branches of horticulture to all the people of the state; the testing of new fruits, flowers and vegetables; a search for better varieties of these; assimilating and bringing directly to the attention of the people the work of our own and other experiment stations; a study of the best methods of marketing the products of the orchard and garden.

In many of these we have fulfilled our obligations. We give of the best we have to all who will read in our reports and bul-

letins; we have planted and maintained trial orchards in northern Wisconsin and in many other ways "advanced the art and science of horticulture throughout the state."

In brief we are doing things! Not to talk, not to promise, but to *do* things is the supreme test of usefulness in an individual or association. This is expressed in a common phrase "make good."

As members of the State Horticultural Society of Wisconsin we may be pardoned for a comfortable feeling of pride and satisfaction when reviewing the work of the past year and say we have "made good." Descending now from these flights of congratulation to actual details I present herewith an outline of the work for the past year.

MEMBERSHIP.

The membership has increased from 350, the date of my last report, to 525, or an increase of 50 per cent. A very large proportion of the new members are business or professional men, a very gratifying sign as it shows our work to be broad enough to attract amateurs as well as professionals. The very remarkable book offers to new members authorized by the executive committee has helped materially to increase the membership. The interest manifested by many of the older members has also helped materially to increase the list.

Thirty-two memberships lapsed during the year. The membership roll is revised every two months when all in arrears are dropped. Before doing this, however, three notices are sent at intervals of two weeks.

The life membership list has grown to the extent of twenty-two names, making a total of eighty-two life members. It has been the policy of your secretary to get life memberships whenever possible in preference to annual believing that such a course tends to strengthen the Society.

SUMMER MEETING.

The summer meeting at Baraboo compared favorably with the summer sessions of past years.

STATE FAIR EXHIBIT.

The exhibit of the society at the State Fair attracted more than the usual amount of attention and the success of that exhibit would seem to warrant making it an annual event.

PUBLICATIONS.

The material for the annual report was in the hands of the state printer early in March but in spite of coaxing and threats it was not delivered until late in May. The distribution of the 3,500 copies allotted by the state law has been accomplished through the means outlined last year, viz.: to members and local societies, county clerks, agricultural students and individual requests. Copies have been forwarded on request to every state, to England, China and Australia. Nothing marks more clearly the progress of our society along advanced lines than the demand for our reports.

Three bulletins have been issued during the year, viz.: No. 8, Pruning Orchard Trees, 15 pages, 18 illustrations.

No. 9, Horticultural Miscellanies No. 1, 10 pages, one illustration.

No. 10, Horticultural Miscellanies No. 2, 11 pages, 3 illustrations.

Of each of these a considerable number of copies remain. Of all preceding numbers the editions are entirely exhausted.

PROCEEDINGS OF EXECUTIVE COMMITTEE.

Four meetings of the executive committee have been held since the date of my last report. Three of these during the week of our last annual convention week and one at Baraboo during the summer meeting. Omitting minor motions and routine affairs the following represents briefly the proceedings of the committee:

Winter meeting: Amendment to Art. III of the constitution proposed permitting members of local societies to become members of the state society on payment of a fee of 50 cents. (This amendment was adopted by the society at the 1907 winter meeting.)

Amendment to Art. V of the constitution proposed. (This was later referred by the society to the executive committee.)

Secretary authorized to enter into contract with L. S. Cheney of Barron for lease of orchard site.

Resolved that the trial orchard committee be a perpetual body, the term of service to be three years one new member being appointed each year.

The location of summer meeting left to board of managers.

Action on amendment to art. V deferred to summer meeting.

At the summer meeting the board resolved to recommend to the society the adoption of the amendment to art. V as follows:

“The members from the several congressional districts shall be chosen by the delegates of their respective county and local societies present at the annual meeting of this society or in case of the absence of delegates from such societies or in case of failure to elect such members shall be chosen from among the members of this society present from such districts. But if any district is not represented, the vacancy shall be filled by vote of the members of this society present at the annual meeting.”

Treasurer requested to furnish bond from a bonding company, the expense of same to be paid by the society.

The week following the annual meeting last year a letter was received at the secretary's office from a resident of Taylor county stating that the Northwestern Nursery and Orchard Co. of St. Joseph, Michigan, was engaged in selling contracts to plant orchards in that county and used as an inducement to purchasers the statement that their company was endorsed by this society, and more remarkable still that the society had guaranteed their company against loss to the extent of five thousand dollars and many other equally ridiculous but dangerous claims. While the attempt to protect people against their own cupidity and ignorance is a most discouraging task your secretary felt that such an outrageous prostitution of the good name of this society must not pass unnoticed and the following letter was mailed to 470 newspapers in the state, most of which published the notice.

To whom it may concern:—The Wisconsin State Horticultural Society has given no guarantee to any nursery or orchard company of any nature whatsoever.

Any contracts obtained by means of such representations are void and may be revoked.

Any money paid on such contracts is recoverable by law.

The agent of any nursery or orchard company who obtains contracts by such fraudulent representations commits a criminal offense and may be punished by due process of law.

The necessity of these statements arises from the fact that a certain nursery or orchard company, operating from outside the state, selling fruit trees in acre lots on contract, claims to hold a guarantee from this society to reimburse the company for losses, etc.

This society gives no guarantee of any nature whatsoever to any orchard or nursery company or firm, never has done so, nor ever will do so.

One year ago at our annual meeting I was appointed as chairman of a committee to investigate the subject of protection to bona fide nurserymen against irresponsible jobbers, etc. In

the course of my inquiries I addressed a letter to Attorney General Sturdevant and received the following reply:

Frederick Craneheld,
Sec. Wis. Horticultural Society,
Madison, Wis.

Dear sir:

You say that certain nurserymen of this state are desirous of enlisting the aid of this state in having a law enacted which will provide that every nursery firm doing business in the state be compelled to give bonds or security to insure the fulfillment of their contracts and you ask if such a law is feasible.

This is a question presenting many perplexities and one which should have very careful consideration. If such a law were made applicable to companies outside of the state, but doing business within the state, it would probably be construed by the courts as an interference with interstate commerce, which is prohibited by the federal constitution.

It is my opinion that effective legislation of this kind would have to be enacted by Congress rather than by the state legislature.

Yours very truly,

L. M. STURDEVANT.

Attorney General.

From this it will be seen that state legislation cannot be enacted covering the case. In looking for another solution the following came to my notice. It is taken from a South Dakota nursery catalog and by a proper substitution of names it seems to me to be the solution:

COMMON SENSE

ABOUT TREES AND NURSERY STOCK.

It is estimated that not less than \$125,000 are taken out of this state annually for worthless trees and at criminally high prices; and notwithstanding the work of the State Horticultural Society, this amount is increasing yearly, with the increasing ability of the people to buy and pay.

This is surely a great waste and works a great hardship in many individual cases, and there should be a remedy.

I have been acting as a committee of the State Society for more than a year to try to find and report a remedy; but have reported that I can find no remedial legislation that will stop or modify this without acting equally against legitimate interstate commerce, except that there must be many individual cases that can be reached and punished through the courts.

The best practical remedy is for every planter to become a member of the State Horticultural Society. Send \$1 to....., the secretary, and become a member; get in touch with horticulture and horticulturists and you are safe.

Where you now throw away money, labor and time on worthless or doubtful stock and at actually criminal prices, you will be instructed how to properly expend a few dollars and get satisfactory returns in Orchards, Groves, Fruits and Flowers.

_____,
Prop. — Nursery,
_____, S. D.

BOARD OF MANAGERS.

This board held six meetings during the year for the purpose of auditing bills and the transaction of other business. As the business of the society increases, the value of such a board becomes more and more apparent.

So much for the past year; it has been one of encouragement; the coming year and the future is bright with hope. We should begin it with the determination to move forward. Nothing may remain at rest on this madly whirling sphere on which we live. We must go forward or backward; we cannot stand still. So it must be with our society. We must not only keep up the good work we have commenced but we must broaden our field.

While we feel that we have accomplished much when the opportunities for horticultural advancement in our state are considered, we must admit that we have but just begun.

Here are a few things that we ought to do:

1st. The maintenance of our present trial orchard work with a gradual but limited extension.

2nd. The establishment of model fruit gardens in connection with our orchards or in more accessible places; for instance within the city limits of Wausau, Superior, Barron, Medford,

etc. In this way we could create an interest in small fruit culture and by suitable signs direct attention to our orchards.

3rd. A trial ground for seedlings and new varieties of fruit either in connection with one of the orchards or separate.

4th. Public demonstrations in spraying at certain tree-fruit centers. Manufacturers and dealers in spray pumps would cooperate. I do not think of any other work that, in my opinion, would advertise our society as much as this.

5th. Excursions to the trial orchards at fruiting time. Newspaper paragraphs tell of people living within sound of Niagara Falls a life time without having seen it. There are thousands of people living in Marathon county who have never seen the Wausau trial orchard. We should take them all, by force if necessary, to see the results of the ten years' efforts of this society in their behalf. The railroads will help.

6th. Some systematic work in southwest Wisconsin with the aim to develop this wonderful apple region. Your secretary continues to maintain that there are very few if any regions in the United States better adapted to apple culture than portions of Grant, Richland, Crawford, Iowa and LaFayette counties. From two to six trial orchards should be established in these counties on the plan of the Medford orchard. Five acres in each planted largely to Wealthy and under the control of the society regarding culture, etc., would in a few years become object lessons worth millions to the people of Wisconsin. In addition, and no doubt in direct connection with these, old orchards could be leased and renovated.

Much could also be done by our society to improve the market conditions in this region, at present one of the greatest drawbacks.

7th. Continued aid to local associations which are attempting to solve the problem of marketing the products of the orchard and garden to the best advantage.

8th. More attention to aesthetic horticulture, which may include: Aid in the formation of village improvement associations and furnishing of planting plans prepared by a competent landscape gardener.

9th. Similar work in connection with the state department of education and township governments for the decoration of rural school grounds and cemeteries.

10th. Help the individual no matter whether or not he is a member of the society. This is an unlimited field.

We have here enumerated ten things we ought to do; there are hundreds of others. As the horticultural interests of the state develop new lines of work will appear.

For many weary years have we horticulturists listened to the never varying stories of the live-stock and dairymen to the effect that Wisconsin is a live-stock and dairy and tobacco state, that it is not a fruit state like Michigan and Illinois, etc., until we ourselves have almost come to believe it! Wisconsin does *not* produce as many barrels of apples nor possibly as many bushels of strawberries as Illinois and never will as long as the people of this and other states are permitted to believe that conditions in Wisconsin are not adapted to fruit growing. I am well convinced that there is as much land in Wisconsin as in Illinois that is adapted to strawberry and apple culture. If we cannot grow the same varieties we can grow others that are equally as profitable. Wisconsin possesses the opportunities, let us take advantage of them. We should not be led astray nor permit others to be deceived by the specious argument of opposing interests. Wisconsin is *now* a fruit state and is certain to be a leading fruit state. We may easily produce all of the summer and fall apples needed in the northwest; our berry fields may multiply a thousand fold without creating a surplus when the problems of distribution and marketing are solved; that great empire north of the 45th parallel left desolate by the woodman's axe is being rapidly transformed; fields and farms appear where there was but recently forests; here may be grown strawberries that ripen in August and Duchess apples that will keep until Christmas. Wisconsin *is* a fruit state. Its future as a greater fruit state lies largely with the members of this society. With the wealth of experience behind us, with the momentum gained by our fifty years we should now move forward with no uncertain step.

REPORT OF TREASURER.

L. G. Kellogg, treasurer, in account with the Wisconsin State Horticultural Society.

1906	Receipts.	
Feb. 6.	To balance due society.....	\$427.36
Feb. 9.	To cash from state treasurer.....	400.00
Feb. 9.	To cash from F. Crane field.....	55.00

Apr. 5.	To loan from German National Bank....	1,000.00
June 7.	To loan from German National Bank....	500.00
July 9.	To cash from state treasurer.....	4,400.00
1907.		
Feb. 5.	To cash F. Craneheld, memberships.....	342.00
Feb. 5.	To F. Craneheld, cash miscellaneous....	72.27
		\$7,196.63

Disbursements.

Feb. 8.	492 By Prof. U. P. Hedrick, exp. winter meet	\$59.25
Feb. 8.	493 Mrs. J. D. Treleven, exp. winter meet	4.00
Feb. 8.	494 Mrs. L. W. Barnes, exp. winter meet	8.50
Feb. 8.	495 Wm. Toole, exp. winter meet.....	2.20
Feb. 8.	496 W. A. Toole, exp. winter meet.....	1.80
Feb. 8.	497 R. J. Coe, exp. winter meet.....	1.30
Feb. 8.	498 M. V. Sperbeck, exp. winter meet....	4.10
Feb. 8.	499 M. S. Kellogg, exp. winter meet....	2.10
Feb. 8.	500 L. A. Carpenter, exp. winter meet....	3.40
Feb. 8.	501 W. J. Moyle, exp. winter meet.....	4.25
Feb. 8.	502 A. H. Reupke, exp. winter meet....	13.70
Feb. 8.	503 A. Johnson, exp. winter meet.....	13.90
Feb. 8.	504 M. Crawford, exp. winter meet.....	24.00
Feb. 8.	505 Irving Smith, exp. winter meet....	6.45
Feb. 8.	506 T. E. Loope, exp. winter meet.....	6.90
Feb. 8.	507 Eva Loope, exp. winter meet.....	5.00
Feb. 8.	508 W. B. Bussey, exp. winter meet....	4.00
	509 void.	
Feb. 8.	510 Franklin Johnson, exp. winter meet.	1.50
Feb. 8.	511 Geo. E. Rowe, exp. winter meet....	20.10
Feb. 8.	512 J. J. Menn, exp. winter meet.....	4.05
Feb. 8.	513 D. E. Bingham, exp. winter meet....	14.70
Feb. 8.	514 M. E. Henry, exp. winter meet.....	4.60
Feb. 8.	515 Donna Dean, services sten.....	23.65
	516 to 522 inclusive void.	
Feb. 9.	523 Parsons Prtg. Co., office supplies....	2.75
Feb. 9.	524 Univ. Co-op. Co., books.....	9.60
Feb. 9.	525 Park & Saffle Co., office supplies....	4.60
Feb. 9.	526 Mautz Bros., office supplies.....	2.25
Feb. 9.	527 McMillan Co., books.....	7.26
Feb. 9.	528 Cantwell Prtg. Co., prtg.....	98.30
Feb. 9.	529 T. E. Loope, salary.....	50.00
Feb. 9.	530 T. E. Loope, fruit for winter meet..	5.00
Feb. 9.	531 Geo. P. Gifford, hotel exp.....	100.00
Feb. 10.	532 Geo. P. Gifford, hotel exp.....	83.00

Feb. 10.	533	H. H. Whetzel, exp. winter meet....	49.50
Feb. 10.	534	F. Cranefield, cash for exp. acct.....	300.00
Feb. 12.	535	Geo. P. Gifford, hotel exp.....	5.25
Feb. 12.	536	W. H. Hanchett, exp. winter meet..	4.32
Feb. 12.	537	F. C. Bach, exp. winter meet.....	13.00
Feb. 13.	538	T. E. Loope, premiums.....	2.00
Feb. 13.	539	H. Simon, premiums.....	15.00
Feb. 13.	540	A. N. Kelly, premiums.....	30.00
Feb. 13.	541	L. H. Palmer, premiums.....	4.00
Feb. 13.	542	Wm. Toole, premiums.....	7.00
Feb. 13.	543	W. A. Toole, premiums.....	1.50
Feb. 13.	544	A. D. Brown, premiums.....	3.50
Feb. 13.	545	D. E. Bingham, premiums.....	6.00
	546	void.	
Feb. 13.	547	O. J. Burnham, premiums.....	2.00
Feb. 13.	548	Geo. J. Jeffrey, premiums.....	.50
Feb. 12.	549	C. A. Hatch, premiums.....	5.50
Feb. 20.	550	Miss E. Jacobson, reporting winter meet	79.00
Mar. 1.	551	F. Cranefield, salary, Feb.....	100.00
Mar. 6.	552	Est. Timothy Brown, office rent....	30.00
Mar. 6.	553	E. W. Keyes, postage.....	20.00
Mar. 27.	554	T. E. Loope, expenses.....	3.50
Mar. 27.	555	Donna Dean, sten.....	24.75
Mar. 27.	556	Parsons Prtg Co., office supplies....	4.85
Mar. 27.	557	Albertson & Hobbs, nursery stock...	5.16
Mar. 27.	558	Jennie Pitman, outline maps.....	2.00
Mar. 27.	559	James E. Moseley, books.....	2.50
Mar. 27.	560	Webb Pub. Co., premium books....	3.34
Mar. 27.	561	Orange Judd Co., premium books...	5.96
Mar. 27.	562	The Macmillan Co., premium books..	13.29
Mar. 27.	563	Park & Saffle, office supplies.....	4.95
Apr. 2.	564	F. Cranefield, salary, March.....	100.00
Apr. 2.	565	Est. Timothy Brown, office rent....	15.00
Apr. 14.	566	C. L. Pearson, exp. winter meet....	1.50
Apr. 30.	567	F. Cranefield, salary, Mch.....	100.00
Apr. 30.	568	Est. Timothy Brown, office rent....	15.00
May 31.	569	T. E. Loope, exp. acct.....	9.90
May 31.	570	L. G. Kellogg, exp. acct.....	14.89
May 31.	571	Donna Dean, sten.....	14.25
May 31.	572	H. Gohdes, services Wausau orch....	20.00
May 31.	573	Walter Pfaff, services Wausau orch..	9.00
May 31.	574	Menges Pharmacy, supplies.....	3.45
May 31.	575	A. D. & J. V. Frederickson, offi. furn.	7.51
May 31.	576	Pardee Drug Co., copper sulfate....	8.75

May 31.	577	Yahr & Lange Co., arsenate of lead..	15.00
May 31.	578	W. H. Adams, services Eagle River..	11.00
May 31.	579	Jewell Nursery Co., nursery stock..	29.20
May 31.	580	Phoenix Nursery Co., nursery stock..	33.29
May 31.	581	Hatch & Bingham, nursery stock....	64.12
May 31.	582	S. F. Harris, express charges.....	3.15
May 31.	583	Morrell and Morley, nozzles.....	2.10
May 31.	584	A. D. Brown, nursery stock.....	3.50
May 31.	585	W. D. Williamson, tree protectors...	8.10
May 31.	586	Park & Saffle, office supplies.....	4.15
May 31.	587	Ed. Gensmann, rent and services, Wausau	88.50
May 31.	588	The Macmillan Co., premium books.	4.76
May 31.	589	Franklin Johnson, services.....	5.00
May 31.	590	Cantwell Prtg. Co., printing.....	81.00
June 1.	591	L. S. Cheney, services Barron orch...	7.15
June 1.	592	P. A. Peterson, services Poplar orch..	101.49
June 1.	593	F. Cranefield, salary, May.....	100.00
June 1.	594	Est. Timothy Brown, office rent.....	15.00
June 5.	595	E. W. Keyes, postage.....	10.00
June 18.	596	E. W. Keyes, postage.....	101.80
July 3.	597	F. Cranefield, salary, June.....	100.00
July 3.	598	F. Cranefield, exp. acct.....	25.00
July 5.	599	Est. Timothy Brown, office rent....	15.00
July 9.	...	Loan German Nat. Bank.....	1,000.00
July 9.	...	Loan German Nat. Bank.....	500.00
July 9.	...	Interest German Nat. Bank.....	18.75
July 23.	600	F. Cranefield, exp. acct.....	75.00
Aug. 2.	601	T. E. Loope, exp. acct.....	13.40
Aug. 2.	602	Pardee Drug Co., copper sulfate....	4.38
Aug. 2.	603	Buffalo Wire Works Co., wire.....	7.58
Aug. 2.	604	W. D. Williamson Tree Protectors..	1.75
Aug. 2.	605	Wm. Owens, supplies.....	3.25
Aug. 2.	606	P. A. Peterson, services Poplar orch.	29.70
Aug. 2.	607	R. J. Coe, exp. acct. trial orch. com.	58.89
Aug. 2.	608	W. J. Moyle, exp. acct. trial orch. com.	43.81
Aug. 2.	609	D. E. Bingham, exp. acct. trial orch. com.	49.78
Aug. 2.	610	Cantwell Prtg. Co., prtg.....	19.75
Aug. 2.	611	Park & Saffle Co., supplies.....	2.75
Aug. 2.	612	H. P. Jacobson, sign board for Barron orchard	7.00
Aug. 2.	613	L. S. Cheney, services Poplar orch..	10.00
Aug. 2.	614	Donna Dean, services sten.....	17.25

Aug. 2.	615	F. Cranefield, salary July.....	100.00
Aug. 2.	616	D. E. Bingham, nursery stock.....	14.40
Aug. 22.	617	Est. Timothy Brown, office rent....	15.00
Aug. 25.	618	E. W. Keyes, postage.....	5.54
Aug. 29.	619	Am. Express Co., express.....	5.55
Aug. 29.	620	Irving Smith, exp. summer meet....	12.02
Aug. 29.	621	C. L. Richardson, exp. summer meet..	9.80
Aug. 29.	622	Wm. Longland, exp. summer meet..	12.25
Aug. 29.	623	John Tiplady, exp. summer meet....	12.25
Aug. 29.	624	Axel Johnson, exp. summer meet....	12.25
Aug. 29.	625	R. J. Coe, exp. summer meet.....	5.99
Aug. 29.	626	H. C. Melcher, exp. summer meet..	5.22
Aug. 29.	627	Dr. E. Everett, exp. summer meet..	2.57
Aug. 29.	628	Wm. Toole, exp. summer meet.....	10.00
	629	void.	
Aug. 30.	630	F. H. Bertram, exp. summer meet...	31.55
Aug. 30.	631	W. C. Andrews, services.....	5.25
Aug. 31.	632	J. C. Vaughn, greenhouse plants....	21.87
Sept. 1.	633	F. Cranefield, salary Aug.....	100.00
Sept. 1.	634	W. P. Bussey, exp. acct. summer meet.	9.82
Sept. 1.	635	Wm. Toole, premiums summer meet	9.50
Sept. 1.	636	Mary Sansum, premiums summer meet	7.00
Sept. 1.	637	Mrs. Frank Berkley, premiums sum- mer meet	3.00
Sept. 1.	638	Ruby Berkley, premiums summer meet.	3.00
Sept. 1.	639	Mrs. C. Arnott, premiums summer meet.	10.00
Sept. 1.	640	Mrs. J. E. English, premiums sum- mer meet.	2.00
Sept. 1.	641	Mrs. Wilbur Cowles, premiums sum- mer meet.	3.50
Sept. 1.	642	Mrs. L. Helm, premiums summer meet.	6.00
Sept. 1.	643	A. D. Brown, premiums summer meet.	5.00
Sept. 3.	644	E. W. Keyes, postage.....	14.00
Sept. 18.	645	W. A. Toole, per diem and exp. State fair	28.26
Sept. 18.	646	G. A. Clark, rent Poplar.....	1.00
Sept. 18.	647	Emma Jacobson, reporting summer meet	33.05
Sept. 18.	648	F. Cranefield, exp. money.....	100.00

Sept. 18.	649	E. W. Keyes, postage.....	44 00
Sept. 22.	650	Aleen Linley, advertising.....	5.00
Oct. 1.	651	F. Cranefield, salary Sept.....	100.00
Oct. 1.	652	Est. Timothy Brown, rent Sept. and Oct.	30.00
Oct. 1.	653	T. E. Loope, exp.....	12.15
Oct. 1.	654	Donna Dean, sten.	16.13
Oct. 1.	655	The Fruit Grower, books.....	2.00
Oct. 1.	656	Menges Pharmacy, supplies.....	3.40
Oct. 4.	657	A. D. Brown, rent, Poplar.....	1.00
Oct. 4.	658	P. A. Peterson, services and rent Pop- lar Orchard	77.90
Oct. 4.	659	Ed. Gensmann, labor, Wausau Orch.	35.93
Oct. 4.	660	Henry Gohdes, services, Wausau orch.	5.00
Oct. 4.	661	A. D. & J. V. Frederickson, panels, State Fair	5.60
Oct. 4.	662	Baraboo Republic, Prtg. Co., prtg...	3.00
Oct. 4.	663	Cantwell Prtg. Co., prtg.....	29.51
Oct. 4.	664	Webb Pub. Co., premium books....	2.67
Oct. 4.	665	Orange Judd Co., premium books...	5.87
Oct. 4.	666	Univ. Co-op. Co., premium books...	6.00
Oct. 4.	667	Doubleday Page Co., premium books	7.20
Oct. 4.	668	The Macmillan Co., premium books.	20.06
Oct. 11.	669	Grace & Hudnall, services.....	5.00
Oct. 11.	670	E. B. Banks, surveyor's fees, Maple orchard	3.00
Oct. 15.	...	Cash for Bond D. Thomas.....	5.00
Oct. 20.	671	Helge Johnson, registering lease....	2.40
Oct. 26.	672	J. M. Dunn, freight charges.....	3.88
Oct. 29.	673	E. W. Keyes, postage.....	20.00
Oct. 29.	674	E. G. Doherty, rent, Maple orchard.	15.00
Nov. 1.	675	F. Cranefield, salary, Oct.....	100.00
Nov. 1.	676	Est. Timothy Brown, office rent....	15.00
Nov. 22.	677	E. W. Keyes, postage.....	19.00
Dec. 1.	678	Est. Timothy Brown, office rent....	15.00
Dec. 1.	679	Wm. Toole, exp. acct. as delegate...	28.00
Dec. 1.	680	F. Cranefield, salary for Nov.....	100.00
Dec. 17.	681	Donna Dean, services sten.....	16.88
Dec. 17.	682	L. G. Kellogg, exp. acct.....	25.99
Dec. 17.	683	T. E. Loope, exp. acct.....	14.80
Dec. 17.	684	Cantwell Prtg. Co., prtg.....	43.00
Dec. 18.	685	W. J. Moyle, exp. as delegate.....	24.90
Dec. 18.	686	The Macmillan Co., premium books.	8.04
Dec. 18.	687	The Orange Judd Co., premium books	1.03
Dec. 18.	688	W. D. Williamson, tree protectors..	3.00

Dec. 18.	689	L. S. Cheney, services Barron orchard	5.82
Dec. 18.	690	Capital City Paper Co., paper.....	2.66
Dec. 18.	691	John Wiley & Sons, books.....	1.35
Dec. 18.	692	Hatch & Bingham, nursery stock....	4.41
Dec. 18.	693	E. P. Sandsten, exp. acct.....	2.32
Dec. 18.	694	D. E. Riordan, Eagle River Orch...	86.50
Dec. 31.	695	L. S. Cheney, rent, Barron orch. 1907	25.00
1907.			
Jan. 2.	696	F. Cranefield, salary.....	100.00
Jan. 2.	697	Est. Timothy Brown, office rent....	15.00
Feb. 5.	698	F. Cranefield, exp. acct.....	364.24
		Total	\$6,460.46
Feb. 5.		Balance on hand.....	736.17
		Total	\$7,196.63

REPORT OF THE TRIAL ORCHARD COMMITTEE.

R. J. Coe, Chairman.

Mr. President and Members of the State Horticultural Society:

Your committee on Trial Orchards made their annual inspection trip the latter part of July at a time when the season was sufficiently advanced to show what effect the past winter had had on the trees and at the same time show about what the season's growth was or would be.

The first stop was at Barron, which is the new orchard that was located in the fall of 1905 and planted in the spring of 1906. Prof. Cheney, who has charge of that orchard and on whose farm it is located, certainly has given it the very best of care and the trees were in fine shape, there being only one dead out of the one hundred and eight planted. This orchard is on a good site with good soil and ought to show what varieties may be depended on in that part of the state when grown under favorable conditions. We shall watch it with a great deal of interest for we fully expect it to show valuable results.

We next visited the Poplar orchard and while we found some of the conditions somewhat unfavorable and some of the va-

rieties apparently unsuited to the soil and climate, which of course is no more than we expected, still on the whole we consider the outlook far from discouraging. In the first place we do not consider the site an ideal one. While it may not be called really low it cannot by any means be called high ground, and the soil is so very retentive of water that the trees hardly have a fair chance to show what they might do in the same locality under really favorable conditions. While there we made arrangements with Mr. Peterson to relinquish the lease on three acres of this tract and have located a small orchard of three acres at Maple about four miles from Poplar. This is on much higher ground with a lighter, looser soil and is, we think, a much more favorable location.

Of the trees in the Poplar orchard we found Duchess, McMahon, Patten's Greening, Okabena, Malinda, Plumb's Cider, Ben Davis, Haas, Red Astrachan, Pewaukee, Seek-no-further, Utter, Scott's Winter, Yellow Transparent all looking well, in fact much better than we expected to find them. The Wealthy, Fameuse and N. W. Greening are fair to good. Hibernial, Fall Orange and Willow Twig are fair, while Longfield, Golden Russet, Talman and a few others are poor to fair. All the crabs are looking good and making a fine growth. The plums, which are all native, are all looking well and making good, healthy growth.

The first year's planting of cherries is nearly all dead. It so happened that they were planted on the lowest ground and could not stand the excessive amount of moisture there has been there for the past two years. The subsequent plantings are looking fair to good. The greater part of this orchard is under cultivation, but one corner of an acre or two has been allowed to grow up in grass and is not in nearly so good condition at the present time as is the cultivated part.

There was planted at this place in the spring of 1906 two thousand apple grafts of ten of the leading sorts. There was a fair stand, and while they were rather small for the time of year they seemed healthy and vigorous and bid fair to make good trees.

If this whole orchard could be tile drained without too great an expense it would, we think, be a paying investment.

The Medford orchard is in very good condition all around. Nearly all the trees seem healthy and vigorous. About one third of this orchard was in peas, one half in potatoes and the balance apparently had not been cultivated at all. This is probably owing to the fact that this corner is quite low and the wet

season has prevented proper cultivation. Mr. Harris is quite anxious that this corner should be tile drained and has offered to stand one half the expense. We think this would pay well.

We next visited the Wausau orchard where last year it looked as if the whole thing was going to pieces and your committee was so discouraged with the outlook at that time. As you have probably all seen by last year's report the orchard was very badly infected with what was thought to be, and afterwards proved to be, the apple canker. It was decided to adopt very vigorous measures to at least attempt to eradicate this disease, which Secretary Cranefield promptly did with the result that in the whole orchard we only found one spot that showed any signs of the disease. In the treatment of this orchard the results obtained in a single season are so great as to be almost beyond belief. In every case where the canker had been cut out and treated the wound had dried and was growing, or in the case of small spots had entirely grown over with clean, healthy wood and bark and, where a year ago the foliage was small and poor and sickly looking, it is now large and clean and healthy looking. It does not seem possible that such a change in any orchard could possibly be brought about in one short year. The treatment of this orchard and the results obtained in a single season are to my mind of more value to the state of Wisconsin than the whole cost of all the trial orchards since they were first started.

The present outlook of the plum and cherry part of this orchard is far from satisfactory. While we should say the plums have a fair location and good varieties were planted they have degenerated to such an extent that they are little if any better than common wild plums. It is the opinion of your committee that these trees should be heavily manured and severely pruned and very thoroughly cultivated. This we think would work a vast transformation in this part of the orchard.

The cherry trees are planted on the lowest ground of the whole orchard and we do not believe they will ever amount to much where they are. If this orchard is to be continued we would recommend that a few trees be planted on high ground as a further test.

The last orchard to visit was the one at Eagle River. This orchard you will remember is planted on almost clear sand and so far as ever getting an orchard out of it is concerned is a flat failure, but as an object lesson it is very much of a success, for it has fully demonstrated to all those in that vicinity who have



Blight canker on Wealthy tree, Wausau orchard, July 1906.
The crotches were badly affected.



Showing distribution of blight canker on Wealthy tree in Wausau orchard, 1906.
Cankers covered with white lead after being scraped and disinfected.



that kind of soil that it is of no earthly use to plant an orchard. This orchard has been abandoned.

Last spring one hundred trees were planted on the farm of W. H. Adams, about three miles from Eagle River, on high land with a good clay subsoil, and arrangements were made with Mr. Adams for the planting of two hundred more trees, making three acres in all, but the deal has fallen through owing to the failure on Mr. Adams' part to prepare the land and also his failure to sign a contract. It seems to your committee that an orchard ought to be located somewhere in this vicinity, provided a good location can be obtained, and if it can be made to succeed our efforts at this place are likely to be as valuable (and probably more so) as at any of the other points.

REPORT OF SUPT. OF TRIAL ORCHARDS.

F. CRANEFIELD.

My report as Supt. of Trial Orchards will be comparatively brief as the chairman of the Trial Orchard Committee reports on this subject. During the year I visited the Wausau orchard four times, Poplar three times, Eagle River twice and Medford once. The plan of culture followed in other seasons has been continued the past year, viz., cultivation during the early part of the season followed by cover crops. The unusually wet season interfered to some extent in cultivating but on the whole weeds and grass were kept well in check.

WAUSAU.

You will recall that my report of the Wausau orchard last winter showed continued and rapid progress of the disease known as canker during the season of 1905 and the expressed fear that if unchecked it would soon completely ruin the orchard. I am pleased to report that the canker has apparently been fully controlled, and that the orchard is in a thrifty and healthy condition. All of this has been accomplished at an expense of less than \$40.00. Perhaps we should add to this the expenses of Prof. Whetzel of Cornell University who attended our convention last winter and showed us clearly the nature of the disease and outlined the method of treatment, for it was the

information and inspiration afforded by this lecture that induced me to make a final but somewhat despairing effort to save the Wausau orchard. Two bright young men, graduates of Prof. John's agricultural school; were engaged to assist in the work. After nearly 100 of the hopeless cases consisting largely of Northwestern, Longfield and Wealthy had been pulled out and burned several hundred remaining affected trees were treated as follows: All cankered spots were cleansed by removing affected bark and wood cutting down to healthy tissues and the wounds disinfected, as directed by Prof. Whetzel, with a solution of corrosive sublimate in water; afterward covering with a heavy coat of white lead paint.

At the same time the orchard was carefully pruned, removing many affected branches. Later in the season the trees were carefully examined and such cankers as were overlooked the first time, were treated. At this time it was found that almost without exception the wounds were healing nicely. The results on the whole are little short of marvelous. Where a year ago last fall the orchard appeared to be on the road to complete destruction the trees now appeared, one year later, healthy and thriving and apparently on the way to full recovery. It is yet too early to speak definitely but should the future results justify our expectation this experience alone may prove of more value to the people of the state than the entire cost of the State Horticultural Society for the past fifty years. We have no cause to mourn over the two hundred or more trees in the Wausau orchard which died, rather we should rejoice that the opportunity was presented to demonstrate that apple canker can be controlled.

While the crop of fruit was not up to that of 1905 many varieties bore a fair crop. Concerning comparative yield, etc., I beg leave to quote from Bulletin No. 10 of this society as follows:

APPLES.

That portion of the Wausau trial orchard known as the commercial orchard originally contained the following varieties of apples: Thirty-eight trees each of Hibernial, Oldenburg, Longfield, McMahan and Wealthy; 19 each of Peerless, Newell, Repka, Okabena and Malinda; 9 each of Hoadley, Alma, Avista, Patten and Dominion. Of these the Patten has borne more fruit per tree than any other variety named, with Hibernial, Longfield, Oldenburg and McMahan next and in order

named. The Wealthy has not done well, due largely to the fact that the trees have suffered from the apple canker. The same is true of Northwestern. The Hibernial bears heavily on alternate years and the fruit is more highly colored than when grown farther south.

The Patten bears a good crop every year. The Longfield has borne heavily alternate years and a fair crop "off" seasons, but the fruit has been too small to be salable and very badly affected with scab.

Okabena bears well alternate years, the fruit being very attractive in appearance, as good as Oldenburg and sells readily. The McMahon trees have made a splendid growth but have borne but light crops.

Peerless, Newell, Malinda, Dominion and Headley have not produced more than enough fruit for samples at the fairs. Avista and Alma have not responded even to this extent. Alma may be pronounced absolutely worthless as grown at Wausau and Avista, Peerless, Newell and Hoadley must soon show results or be put in the same class.

In the "experimental" portion of the orchard two trees each of about 50 varieties of apples were planted. None of these are of special merit except Dudley.

PLUMS.

The native plums in the Wausau orchard have degenerated into common "wild" plums. Although the varieties planted are of the best, as Surprise, Quaker, De Soto, etc., in quality and amount the crops borne have been no better than could be found in any wild plum thicket in many parts of the state. This is due to lack of proper attention in cultivation, pruning, spraying, thinning the fruit, etc.

For some reason no attempt had been made to cultivate the plum orchard until the spring of 1904 and three seasons' work has scarcely sufficed to subdue the sod and bring the ground into merely a fair state of cultivation. But little pruning has been done, the sod culture system resulted in stunted trees, and the tops a mass of fruiting wood. Conditions have been such that it was impractical to properly thin the fruit, resulting in large crops of inferior fruit practically unsalable. Trees of similar varieties of native plums planted in the Marshall orchard at Madison at the same time have yielded immense crops of large juicy plums, which have sold as high as \$2.50

a bushel. All of which teaches a valuable lesson, viz., that native plums to be profitable must have high culture. Neglect produces only "wild" plums.

CHERRIES.

The original planting consisted mainly of Montmorency and Early Richmond, but other varieties have been added from time to time. All trees have made a good growth except in one low spot of ground and are well supplied with fruiting wood, but the crop has been almost an entire failure each year, due probably to late spring frosts. The results to date in the Wausau orchard are not encouraging for cherry growing.

The orchard was sprayed three times, once with copper sulfate in water at the rate of two pounds to fifty gallons and twice with Bordeaux mixture. Swift's arsenate of lead was used with the Bordeaux at the rate of two pounds to fifty gallons of Bordeaux. The second spraying if done just after the blossoms have fallen is probably the most important one of the three commonly recommended. If the work is *thoroughly* done at this time with a properly prepared Bordeaux and a reliable insecticide there is really little need of a later application.

The results from spraying in the Wausau orchard certainly paid well as the fruit and foliage were both almost entirely free from the scab and wormy apples were an "unknown quantity". The spraying received the undivided attention of your superintendent while in progress.

The question of the early abandonment of the Wausau orchard lease is one that should be carefully and seriously considered at this session. It is the opinion of your superintendent that the orchard should be held at least one year longer until the conclusion of the experiment with the canker and until one or more excursions of Marathon county people have visited the orchard. How much longer is a matter for discussion.

POPLAR.

The Poplar orchard has improved wonderfully the past year. The growth in 1905 was not encouraging and had a severe winter followed it is likely a large proportion would have perished. The season of 1906 was more favorable and the prospects are now decidedly more encouraging. Fifty-three trees died during the year of 1905 and were reset last spring. Very few died the past year.



Pit cankers on trunk of apple tree in Wausau orchard. These cankers formed at the base of blighted sap-sprouts. Hundreds of similar cases were found, July 1906.



Pit canker, above, from blighted sap-sprout. The base of a sap-sprout was found in the large canker below and the beginning of this extensive and almost fatal injury could no doubt be traced to a blighted sap-sprout. Beware of sap-sprouts!



Mr. Peterson forwarded twigs of apple and plum trees from time to time during the season and these compared with twigs from similar varieties at Madison shows that growth continued at Poplar several weeks later than at Madison. It is suggested that the methods of orchard culture must, if possible, be so modified as to check this late growth.

BARRON.

The first planting was done here last spring, consisting of one acre. The following varieties were planted: 10 Duchess, 10 Wolf River, 5 Longfield, 10 Wealthy, 3 Gem City, 3 Lily, 10 McMahan, 10 Northwestern, 5 Tolman, 5 Snow, 5 Dominion.

Plums: 5 Surprise, 5 Quaker, 5 Hammer, 5 De Soto.

Cherries: 10 Early Richmond, 10 Montmorency.

The soil and site are both good and we look forward to excellent results.

MEDFORD.

There is little to be said about this orchard but that little is encouraging. Considerable planting has been necessary consisting of 48 apple, 4 cherry and 12 plum, but the orchard is now full. Mr. Harris spends his entire time in the orchard giving it loving care.

EAGLE RIVER.

After due deliberation on the part of the trial orchard committee and the board of managers this orchard was abandoned early in July. This is the fulfillment of predictions made in my first report to this society.

In this orchard, originally containing 540 trees, over 1,000 trees have died and been reset in three years, or in other words it was found necessary to replant the entire orchard twice. But very few of the original trees now remain, viz.: a few crabs and a few native plums. Last spring most of the trees set the year before were dead and instead of replanting, steps were taken to obtain a relinquishment of the lease. Unfortunately it was not possible to accomplish this until the 10th of July. An unsuccessful effort was made to lease another site in the vicinity of Eagle River, more elevated and on heavier soil, but the orchard committee hopes to accomplish this the coming year.

MAPLE.

Concerning the sixth and newest trial orchard I quote again from Bulletin No. 10:

SIX TRIAL ORCHARDS.

The sixth trial orchard of this society has recently been located at Maple, Douglas county, on land owned by E. G. Doherty of that place. This is pursuant to action by the trial orchard committee, confirmed by the executive board. Three acres have been leased, a portion of which will be planted next spring. While the soil of Douglas and Bayfield counties, including the Poplar site, consists largely of the very heavy Superior red clay a portion, as at Maple, is much lighter and designated by soil surveyors as Superior sandy loam.

Maple is a small town four miles east of Poplar on the Northern Pacific Railroad, having an altitude of 1,277 feet, or 274 feet higher than Poplar.

A release has been granted by P. A. Peterson, owner of the Poplar site, of the portion remaining unplanted and the action of the committee amounts practically to a transfer of a portion of the Poplar orchard four miles farther east and to different soil and drainage conditions.

It has often been suggested that on account of the regular and heavy snowfalls in northern Wisconsin that full planting might succeed better there than farther south. Accordingly a few Wealthy apple trees were purchased and set in the Poplar orchard last October. The results will be looked for with interest next spring.

WEDNESDAY—MORNING SESSION.

PRESIDENT'S ADDRESS.

DR. T. E. LOOPE.

The Wisconsin Horticultural Society has a goodly number of members, a fair amount of enthusiasm, and are only paupers on the financial question. We have entered on a work of vast importance to the state. The trial orchards if carried to a

demonstration will give our people valuable information that could not be gathered in any other way, saving our citizens much time, much disappointment and great expense. This work should not be hindered by lack of interest, unkind criticism or insufficient funds. It is being carried on intelligently and honestly. Those in charge of the work are capable men theoretically and practically and are striving to attain the greatest good to the greatest number.

Our work cannot be carried forward without considerable expense but the books are always open to the fullest investigation. There is no graft in our society.

The unanimity of thought and action of the society for years past has been a source of congratulation to its officers and it is to be hoped that it will continue indefinitely.

Our winter meetings have been noted for the valuable subjects presented and the masterly manner in which they have been handled. The most progressive talent has been secured from abroad and our reports are filled with the best thoughts on every topic on our programme.

Shall we continue to be superfine or just middling?

The mills of the gods have completed their annual output. If, as it is said, their product is "exceedingly fine" we have a chance to examine the grist and take or reject a seems good to us. If we individually have been in the grind, let us hope that the slow process has developed some superfine material, something fit. Perhaps some of our selfishness has found the refuse pile. May they grind slower and finer next year. Is the greed and envy all in the dump? Shut the millstones close or it filters through and infests the high grade product. Has the foul seeds of suspicion, faultfinding and jealousy been winnowed and separated from the good grain?

Is the finished product low grade, standard or superfine?

Does it contain the quality of energetic action?

Does it have inherent perseverance?

Has it that essential, subtle elevating power called enthusiasm?

Without this element it must be but a low grade inert mass unfit for horticultural digestion, just middlings, hog feed, fit only for beasts, unassimilable by gods, producing perhaps dollars, a by-product, having no value in promoting health, brain food or happiness. Without enthusiasm the thrill of great satisfaction is overpowered by the Ptomaine of greed and selfishness, fatal to soul development. Many people live on middlings and grow gross and unwieldy on dollars only.

There is another essential god-given ingredient called Fra-

ternity. Its substance was well voiced when Ben Adhem told the Angel to write him "as one who loved his fellowmen", and its quality was vouched for in the announcement, "And lo, Ben Adhem's name led all the rest."

The horticulturist should be girded with all the superfine qualities. His work deals with the most exquisite soul satisfying products of the soil. He produces the refined, bright hued gems of nature to promote goodfellowship, amiability and easy digestion. Millionaires and Mountebanks, Gamblers or Gluttons, Kings or Serfs, sing the praises of his Jewels and children shout with joy and eagerly gather around the board at sight of his treasures. He dispenses gladness, goodwill and comfortable appetites to his multitude of patrons. He is a benefactor and health giver at the same time. He gives rich blood, bright eyes, active muscles, reduces the ravages of disease and cheats the doctor out of big bills. The aroma of his fruits was caught in the garden of Eden, the flavor from enchanted islands of tropical seas, the coloring from the gorgeous sunsets of fairyland.

The horticulturist often has no need of pockets, while those of the commission man and railroads are bulging but he at last goes to Heaven and they go to banking. His habitat extends from Alaska to the Philippines, from California to Porto Rico in our possessions and even the Minnesota Horticultural Society, strange as it may seem, enrolls 2500 of him. There is no record of a horticulturist at the north pole but if Peary ever gets there and finds one you can wager that he will have frost plums, snow balls and ice plants the year round.

PLANT BREEDING SESSION.

BREEDING FOR HARDINESS AND OTHER DESIRABLE QUALITIES.

CHARLES G. PATTEN, Charles City, Iowa.

What is hardiness? It is not that quality, or character, that fits a plant or tree to endure. Have we put into the word hardiness, the full meaning of the thought that we would like

to express? Have we not too much confined our thought to the fact, of trees or plants enduring a low winter temperature?

That is the meaning as I understand it that we have given to the word hardy, or hardiness.

But that does not answer our purpose, we have only covered half of the year. The transcendent scab for instance may be uninjured by a temperature of forty degrees below zero, and blight nearly to death the following summer.

Other trees and plants may endure the winter, but have their leaves so weakened and injured by unfavorable summer conditions, that they are rendered unfruitful and valueless.

If such are the facts, then we must either enlarge the meaning of the word hardiness, or what would be far better substitute the word adapted, for it; for that means, to fit; or suited to the climatic conditions of the whole year.

For instance, a plant or tree may be wholly adapted between the latitudes of 42 and 45 along the Mississippi river, and be wholly unadapted in the same latitudes along the Missouri.

So it is the business of the horticulturist to breed trees and plants that are adapted to the conditions where they are to grow. Even natural forest trees vary greatly in their power of adaptation.

To illustrate this fact it will be only necessary to direct attention to two species of trees. One the White Beech, that grows into such grand proportions within twenty miles of Lake Michigan north of Milwaukee, and which is made to live with great difficulty here at Madison. I once tried it ten miles north of this city where it almost wholly failed to grow; and at my home in Iowa, one tree out of fifty in a period of fully twenty years has attained a height of only five feet; the other forty nine are dead.

While *Catalpa Speciosa*, the native home of which is in the lower part of Indiana, Illinois, Missouri, Tennessee and Mississippi, along that great river and its tributaries between latitudes $32\frac{1}{2}$ and $37\frac{1}{2}$, in a climate that is very mild and having abundant moisture.

Today, even with the most indifferent selection of seeds, this tree is becoming adapted to this locality and Northern Iowa; many specimens appearing but little less adapted to this latitude than other species of our forest trees.

If almost unconscious selection can breed in so short a period, so much hardiness, or adaptation into a forest tree, that it will thrive in a prairie climate three to four hundred miles north of its native home in a wilderness, is it not the most as-

suring evidence that we can breed hardiness into our highly domesticated fruits.

Professor Bailey says "We know as a matter of common horticultural experience that any change or variation in any organism may become hereditary, or be the beginning of a new variety". Again, "plant organism is plastic by nature and quickly responds to every touch of environment".

Mr. Burbank says "every characteristic can be enlarged and improved upon; leaf, flower, size, color, form, fragrance, and the size and shape of the trees and plants which produce them".

Darwin says "slight changes in the conditions of life add to the vigor and fertility of all organic beings". Hardiness in plants is analogous to endurance in the animal: It is the especial character that fits it to persist; to live.

A tree is hardy because it has a constitution which adapts it to the climate and soil where it grows; whether in the desert, in the forest, on the mountain top or in the valley, either north or south.

It then becomes the business of the plant breeder to find out by experience and observation the trees or plants best suited to his purpose. Variation is everywhere manifest in plant life. And as selection is a dominating factor, in augmenting, developing and fixing the type or character of the trees that we aim to secure, he will select no inferior tree for either parent; only those individuals or varieties that come nearest to his ideals, whether of crossed or pure seedlings.

Selecting from varieties that possess marked vigor, perfection in leaf, in bark, in a normal period of ripening their wood, neither too late or too early, perfect in form, free from blight, limbs strongly shouldered, productive of fine even sized fruit, and as free as possible from every imperfection; and if there is any virtue in heredity, he will not have to grow five hundred thousand, or even one hundred thousand seedlings to secure adapted varieties for the region which he inhabits.

Prof. Hugo de Vries says "some varieties are most disagreeably inconstant, while others remain as true to their type as the best species."

Mr. Theodore Williams of Nebraska, in his very numerous experiments to improve the plum, finds that the seedlings of the Wild Goose are almost wholly barren, "giving no return," as he puts it, "for their existence."

In thirty-eight years' experience in planting the seeds of a large number of different varieties of apple, I have found a great difference in the seedlings of different varieties, and also of a single variety; some giving a large proportion of strong



Seedling of Oldenburg, originated by C. G. Patten.
One of the best varieties for Northern Wisconsin on account of its hardiness.

trees, free from disease, while others would be feeble growers, weak in leaf, and subject to rust and blight.

If my memory serves me right, it was in 1880 that I bought a carload of apples from your University farm, among them was some splendid specimens of the Perry Russett from which seeds were saved. Also some Oldenberg seeds grown and planted at Charles City, and to my surprise the Russett gave the largest proportion of vigorous and hardy seedlings.

In looking up the history of this variety in a work entitled "The Apples of New York," by Prof. S. A. Beach, now of the Iowa Agricultural College, I discover that this is a remarkable tree. Some trees of it growing in Onondago county, New York, nearly one hundred years old, are reported to be still very productive.

It was evidently known in Rhode Island before its appearance in New York, as it was known there as Rhode Island Russett, its identity being discovered in 1904 by our U. S. Pomologist Brackett, as being the same as the Perry Russett of the west.

Prof. Beach classes it in the same group as Pecks Pleasant, Rhode Island Greening, and Green Newton. The best of the seedlings I named "University" in honor of the place where, in fact, it originated.

It is twenty per cent more hardy than the parent tree and a most remarkably vigorous grower, maturing its wood thoroughly, and is a good bearer of fine commercial sized apples. It is doing well on the forty-fifth parallel in Minnesota, and when introduced into central and northern Wisconsin will take a place for hardiness beside the Patten Greening, and I shall look for it to be classed as a good apple. It appears to be a pure Perry Russett seedling.

I also have what appears to be a pure seedling of the Fall Orange that is far more hardy than the parent tree, while the fruit resembles it closely, and is nearly as good in quality.

The Iowa Beauty, well named for both tree and fruit, is a seedling of the Golden Russett, that I have felt sure was a cross with the St. Lawrence. It is a magnificent tree and nearly if not quite as hardy as the Oldenberg.

Another tree, a seedling of the Ben Davis, and an undoubted cross with the Jonathan, is more hardy than either parent, is quite a good keeper, and a fine eating apple. Another pure seedling of the Ben Davis is fully twenty per cent more hardy than the parent tree.

Still another tree, a seedling of the Fameuse, planted in 1881, is fifteen per cent more hardy than the parent Fameuse,

and the hardiest of the Fameuse seedlings, except the Canada Baldwin. It is a third larger than the Fameuse, quite uniform in size, a very brilliant color, and of a mild, pleasant flavor. Was the first premium seedling at the Iowa State fair in 1896.

I might enumerate farther, but will only say that long experience confirms the opinion that climate and soil influences will breed hardiness or adaptation independent of cross-pollination.

Call these notable exceptions what we will, "mutations," or "breaks in hereditary action," they are but the natural and marked expressions in plant life, of the cumulative forces of culture.

Referring now briefly to some of the artificial crosses that have been made at Charles City, will say that Pink Annis crossed with the Jonathan sixteen years ago, has given very unsatisfactory results. One cross of Jonathan and Duchess, is sweet, but almost wholly unproductive.

Two crosses with Jonathan and Gideons Mary are sweet, quite good and fairly productive, showing that there is a sweet apple close up in the pedigree of the Jonathan.

A few crosses with Wolf River and Brier Sweet have given some remarkable variations, all colored, but nothing of special value except for farther experiment.

Brier Sweet is a first cross with the Bailey Sweet and the Red Siberian; and when crossed with the Pound Sweet, has varied in size and color, but all are sweet.

In this last cross there are sixteen years of valuable experience in breeding for the State Experiment Stations.

Many other crosses were made, a few of them promising; twenty or more varieties being used.

Fourteen years since a good many crosses were made, perhaps those of the Grimes Golden and Patten Greening are the most noticeable, all are yellowish, or from light to dark green, except one having a bronze cheek.

All are of good size, some of them very smooth, and remarkably uniform in size. Some of them good, but none of them as high in quality as the Grimes; but one of them is a good keeper, and was awarded a first premium at the Northern Iowa meeting one year ago.

Working nominally as a State station, always under pressure of other work in the blossoming season, and with little encouragement at its inception except from our now U. S. Pomologist, Col. G. B. Brackett, and a few others, with almost no financial aid, this breeding work has been hard work, and slower in its

development than it need have been under more favorable circumstances.

It was undertaken at a time of the almost universal belief that Russia held in store about all that was needed in our northern horticulture, as well as against the authoritative assurance that it would take from three hundred to a thousand years to procure a seedling of the hardiness of the Rauls Janet as hardy as the parent; which opinion was disproved, both in the first and second generations of undoubted pure seedlings of the latter variety.

And now in closing, and in view of the great work at both state and national experiment stations that has been inaugurated in the last few years in the breeding of fruits, I doubtless will be pardoned for referring briefly to a paper on "Experimental Horticulture" presented to the Iowa State Horticultural meeting of 1881, wherein I said, "Everything that begets life, whether animal or plant, stamps in a greater or less degree the impress of its individuality either upon its immediate or remote offspring.

"Had we acted in harmony with this law by planting generously the seeds of our very best fruits, we should now be less frequently challenging the wisdom of Deity in giving to this northwestern region its peculiar climate.

"Again I repeat, that the crowning error of our experimental horticulture was that we did not plant, and continue to plant the seeds of our hardiest fruits from 1856 to the present time."

Continuing I practically outlined the views that are now generally accepted in this breeding problem, showing that "hardiness or ability to endure the climate is the first requisite everywhere," and that the latitude of southern Iowa demanded that we combine the characters of different varieties, from those that were needed in central and northern Iowa and the latitude of St. Paul.

And from a paper on "Plant Breeding" in the report of 1885 I used the following words: "If I could send a voice that would go ringing through the harvest days of our fruits for the next fifteen years, and could make it so melodious and attractive that the harvesters would stop, listen, and obey, saying, 'Save the seeds of the largest, most perfect in form, most beautifully tinted from the finest bush, the strongest and most fruitful vine, from the hardiest and best tree, of the most delicious fruit of every kind, and plant, and replant the best in every county and voting precinct in Iowa, the work would be accomplished.'

"I could close my paper and this horticultural society could adjourn its labors and reassemble in the year of our Lord 1901

to witness a grander improvement of fruits than the world has ever seen in a half century of its progress."

And now again in closing this somewhat lengthy paper allow me to add, that with our present knowledge of the laws of breeding, and our knowledge of the leading families of apples, we can produce the color which we desire in seventy-five out of one hundred seedlings grown.

And that we can breed with reasonable assurance the form fruit, and uniform size also. And I go still farther. We can breed not only commercial size, but so uniform that there will be almost no culls.

It is true that your speaker is only a pioneer, making very little claim to scientific knowledge, but so far as my experience and observation in cross-breeding goes, I am convinced that at least with our fruits the male parent dominates in the cross; in color of fruit, in form of fruit, and in form of tree.

And in saying this I am not unmindful of the force and power of heredity; that a balanced force, and especially a prepotent mother would not in some degree change such results; but it would be only the exception; this statement does not, however, include hybrids between mongrels and fixed species.

Mr. Melcher: I would like to have Prof. Patten explain the difference between a hybrid and a mongrel.

Mr. Patten: A mongrel would properly be a cross between ordinary varieties, common varieties and unknown varieties, like an ordinary seedling that we would pick up anywhere in our orchard. A hybrid would be a tree between a known variety, a common apple and a Siberian crab.

Prof. Sandsten: I would ask that the discussion of this paper be left until the whole subject has been presented. I think discussion comes in more freely when we are through with the papers.

The President: I am going to call on Prof. Sandsten to outline his theory as to plant breeding.

SOME PROBLEMS IN PLANT BREEDING.

E. P. SANDSTEN,
Professor of Horticulture, University of Wisconsin.

The term "plant breeding" may be defined as the science and art of mating related and unrelated plants with the object of obtaining new individuals possessing certain characteristics.

Of late years the term has been used indiscriminately by nursery men and seed growers to impress their patrons with the quality of their products. These persons are not plant breeders in the true sense of the term. They have merely practiced plant selection more or less rigidly, and through such selection have obtained seeds or plants of uniform quality and fairly well fixed characteristics. Not only has the term "plant breeding" been abused, but other terms, such as pedigree, heredity, atavism, etc., have been and are employed without regard for their real meaning. Quite often we pick up catalogs of plant growers with glaring head lines that they grow only pedigreed plants. Pedigree in the sense used by these persons does not mean that plants have record of ancestors back to some definite starting point but rather that the plants so advertised were produced by selection of certain individuals which have been increased by the usual methods of plant propagation, so there is really no record or pedigree in the true sense of the word, but merely a picked strain of a given variety. This promiscuous use of terms has led to a misunderstanding of what plant breeding really is and what it stands for.

In dealing with plants and animals we are dealing with the complex and little understood phenomena of life, and in dealing with life, as such, we should always be conscious of the fact that while several laws regarding the behavior of organisms under certain conditions have been formulated and can be applied, there still remains some of the ultimate questions which neither science or philosophy have as yet been able to solve. It is important that we should recognize our limitations when confronted with the ultimate problems and frankly acknowledge our limitations and ignorance.

Heredity is said to be the corner stone of plant as well as animal breeding. Heredity is the law that governs all organic life in so far as the parents transmit their likeness to their offspring, or in other words, the law that "like begets like." Without any assurance that like begets like, plant and animal breeding would be almost impossible. Yet, while we accept this doctrine in general, we should not be too strict in its interpretation. Observation has taught us that it is impossible for like to produce like; that likeness in the exact sense of the word is impossible in nature. Individuals differ in minor characteristics, no matter how careful the breeder is. In fact, likeness is the essential for the survival of existing forms and new forms in the world. Unlikeness is also necessary for the process of evolution to work out its destiny. In the struggle for existence in which

all plants and animals are engaged under natural conditions, the surviving individuals are those which are most unlike their neighbors. However, for practical purposes the law of heredity as defined holds good and may be relied upon by those engaged in plant breeding.

The word "pedigree" is the record of ancestors dating back to some prominent individual or individuals. It is the family record and a record of breeding.

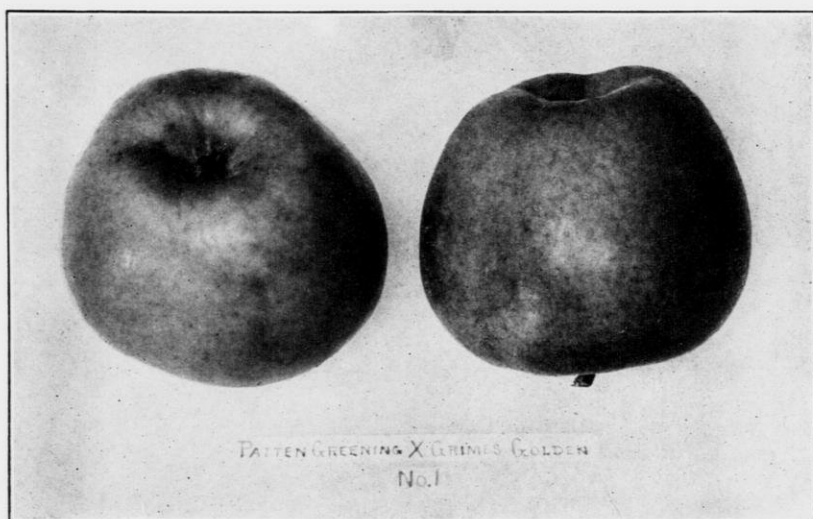
The term "atavism" is employed to express the sudden appearance of characters which previously existed in the ancestors but which have been suppressed and laid dormant for a shorter or longer period of time.

"Sport" is the term used to designate the sudden appearance of a new form or some marked characteristics which have not previously been known to exist either in the immediate or remote ancestors, hence of which no records have been kept. The similarity in meaning between the term "atavism" and "sport" should be recognized, and the only reason for using two terms is that the sudden occurrence of old characteristics may be found to be recorded in the history of the ancestors, hence they may be traced back to their origin, while in the case of an appearance of a sport, no records or characteristics possessed by the sport can be found in the pedigree or record of its ancestors.

By the term "struggle for existence" we mean the competition which plants and animals are engaged in under natural and unnatural conditions. This struggle for existence, which in almost all cases is a struggle for food, is the battle ground where plants settle the supremacy in a way not unlike the warfare of nations. The stronger always prevails over the weaker. This struggle for existence is a factor in plant evolution and can be studied by anyone who cares to watch the warfare between plants for possession of a certain vacant piece of ground.

"Prepotency" is the ability of a plant to impress its characteristics in a marked degree to its offspring. The ability may or may not be dependent upon the physical vigor or upon general conformation of the individual. It may in a measure be accounted for by supposing that the prepotent individual has a long line of pure-bred ancestors, thus possessing a preponderance of pure germ cells.

The purer the breeding the more certain are the results. The fixation of type is less important when we are dealing with plants which are propagated by cutting, grafting, budding, or by any asexual method, since in such case the original parent individual is propagated and retained, while with plants propa-



"Almost an exact duplicate in form, color and season of Grimes. Of 18 crosses, five like Greening, thirteen midway between." C. G. Patten.



Iowa Beauty apple, seedling of Oldenburg, originated by C. G. Patten.



gated with seed the necessity for fixation of type is very important.

The degree of instability of the first hybrid offspring depends in large degree upon the violence of the cross or upon the affinity of the plants mated. This affinity is not necessarily based upon close or remote relationship. The belief that close or remote relationship is necessary to success in plant breeding is slowly passing away. The term "relationship" has been much abused both by botanists and horticulturists, since relationship is based mainly upon similarity of structure. A number of experiments have demonstrated that successful breeding or crossing is not confined to within the limits of relationship.

There are both chemical and morphological differences in plants which must be considered by the breeder, such as difference in length of pistils of the two plants to be crossed and differences in the various floral parts are very important. It is conceivable that if the pollen from the plant having short pistils is transferred to a plant having long pistils that the pollen tube will not grow long enough to reach the egg cell. In other words, the growth in length of the pollen tube of a given plant is limited to the requirements of that plant.

Then there are obstacles which are of a chemical nature, such as chemical differences in the cell sap which prevents the proper germination of the pollen. This phase was carefully studied six years ago, and the result of such study showed wide range of sugar contents in the juices of the stigma and the style. Apple pollen was found to germinate best in five per cent sugar solution, plum pollen in four per cent, American plum pollen in three per cent, peach pollen in five per cent, common berry pollen in four per cent, plantain pollen in two per cent, sour dock pollen in thirty-five per cent, and clover pollen in forty per cent. These variations show conclusively the chemical requirements in the pollen for germination. Further, it shows that these requirements must be taken into consideration in breeding. To be sure the average breeder does not nor perhaps need not take into account these questions. But to those engaged in strictly experimental breeding these principles help to explain the many failures which meet us on every hand.

There are two main factors responsible for variation among plants, both wild and cultivated, namely environment and sexual mixing. Under the term environment, we include all of the external factors that in any way affect the plant, such as soil, climate, cultivation, plant food, etc.; under the term sexual mixing the influencing of crossing and hybridizing.

With the work of Weisman and the revival of Mendel's work

and last with the mutation theory of DeVrie, heredity has been the center of attraction among both plant and animal breeders. The work of these men has had a tremendous influence upon scientists, and disciples are not wanting—in fact they are numerous.

It is not my purpose to discuss the views as set forth by these men, though I feel very strongly that as horticulturists many of us cannot fully agree with many of their statements. Heredity may be the breeders' cornerstone, and undoubtedly is, though speaking figuratively a corner stone is not indispensable to a building. I remember distinctly when Weisman's work was first published what a storm of protest arose from many horticulturists and scientists, and how later many modifications were made by Mr. Weisman to make his theory fit the cases which were brought up against it. His argument for the non-transmissibility of acquired character was, and is, especially obnoxious to many since it does not agree with the experience of men engaged in actual work. Without entering into a discussion of the biological side of this question, I venture to say that the transmissibility of acquired character both upon plant and animal life has been fully proven. And, further, that the transmissibility of acquired character is the most vital factor in the development of plant life, both in nature and in cultivation. Mere verbal subterfuge does not alter the fact that acquired characters are transmissible and, further, that environment is a factor which must not be overlooked by plant breeders. The saying that "we are all creatures of circumstances" has more truth than poetry in it. Further, it is both reasonable and probable that plant and animal life as it appears on the planet to-day is a result of the slow acting environment. Even the DeVrie theory of mutation resolves itself into the action of environment upon the dormant or latent characters, which in such action gain the ascendancy over the dominant or active characters and mutation occurs, and a new form of plant life is created. Call it mutation, or any other name, the fact remains that the environment is the controlling factor in the transformation. Under cultivation mutation is more common than in nature, simply because the chances in the environment are greater and the plant responds more rapidly.

We are in the habit of speaking of adaptation as something entirely apart from variation. Adaptation stands for the slow changes induced by the environment. If the existing plant forms are largely the result of adaption to the ever changing environment, then we have strong evidence that this adaptation or variation of plants can be utilized to considerable advantage

by the horticulturist to acclimate plants which are not hardy to our climatic conditions. I fully realize that this view will be criticized and derided by those who have experienced losses and disappointment in the growing of fruit trees not adapted to our soils and climate. It may, to be sure, require a longer period of time than is allotted to a single person, but we should bear in mind that we are not working for this generation, but for the generations to come. Further, I am not quite convinced that the sad experiences of the past are of sufficient argument for us to draw the sweeping conclusion that results cannot be accomplished within the span of one person's life. The large number of old eastern apples trees now growing in the eastern and southern part of Wisconsin are eloquent witness to the kind of adaptation I have spoken of. Not only this, but those trees are old and have stood the test of the most severe winters on record. I do not mean to say the eastern varieties can be grown successfully all over the state, but I do say and believe that certain sections along Lake Michigan are adapted to many of these varieties. As a further argument, I would mention the adaptation that the corn plant has undergone within the last ten or fifteen years.

Fifteen or twenty years ago it was considered impossible to grow corn in the central part of this state or central Minnesota, while we have varieties today that have proven quite hardy and adapted to these sections. If it be argued that this has been accomplished through breeding, which is in a measure true, there may also have been adaptation to the environment as the parents of these varieties must have originally come from a more southern climate.

In conclusion I wish to say that I am not arguing against heredity as a factor in plant breeding and plant development, but rather I wish to emphasize the influence of environment, as it is to my mind one of the most important as well as the most neglected forces which operate on organic life. Nor do I wish to belittle or deride the work of Mendel and others, though we may question the application of some of their theories and laws in breeding, for every discovery and every contribution to the subject of heredity and other factors associated with plant breeding will do much to encourage a further study of this subject and aid us materially in a more intelligent pursuit of breeding.

BREEDING HARDY FRUITS.

PROF. N. E. HANSEN, State College of Agriculture and Mechanic Arts, Brookings, South Dakota.

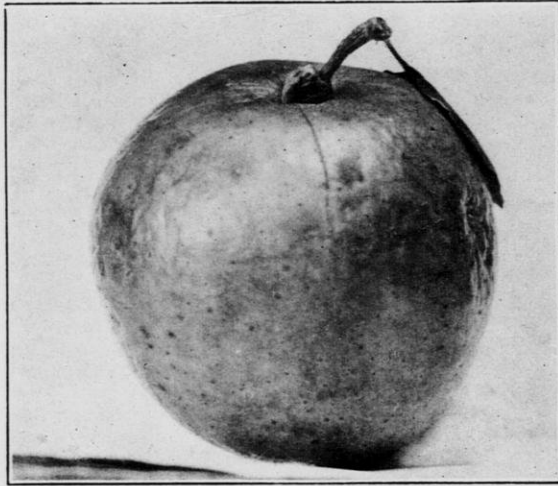
The main elements to success as I see them, in this part of prairie horticulture, are: 1. Not to be satisfied with plants as we find them but to use them as starting points for a nobler race; 2. To work with Nature and not against her—"to hitch my wagon to a star" but to be very careful to ascertain first which way the star is going; 3. To lay the whole world under tribute for materials.

Now for some principles underlying this work:

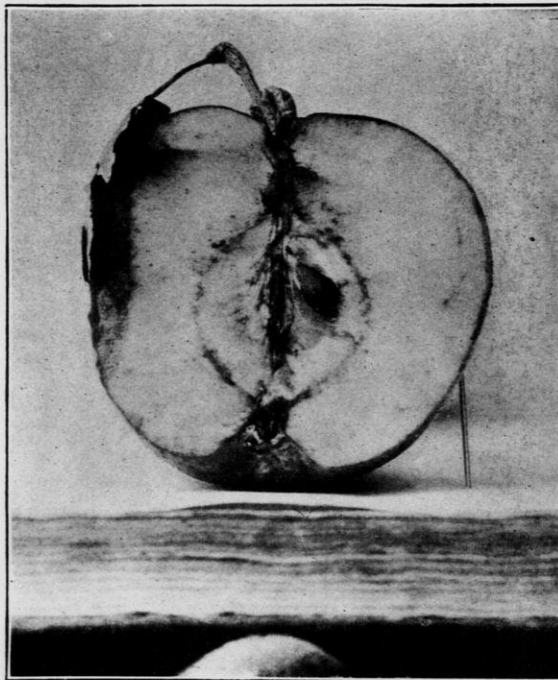
REASONS FOR GATHERING NEW MATERIALS.

For the vast prairie region west of the Missouri river, from Texas to Manitoba, we especially need plants that are drought-resistant. The mistake has been made hitherto to take for granted that fruits, trees, grains, grasses and forage crops brought over by the early settlers from the mild regions of western Europe, a region of abundant rainfall, are those also best adapted for semiarid conditions of soil and climate. We now realize that we should take advantage of the work of ages of selection in the dry regions of the old world, and import anything of promise. Secretary Wilson, of the United States Department of Agriculture, has sent men to the ends of the earth to secure plants adapted to the varied conditions of our country. That the philosophical basis underlying this work is sound is acknowledged by all who have investigated the subject. This does not mean that we should neglect our native species. On the contrary, we should explore our own wilds as much as the wilds of Europe, Asia, Africa, South America, Australia, and the islands of the sea. Then, when the ends of the earth are brought together, by making wise use of the new light in heredity revealed to us by Mendel and De Vries, we can obtain new plants combining the desirable characteristics of these various races.

As the first agricultural explorer sent out by the department, I made a trip in 1897-'98 of nearly ten months to Russia, Transcaucasia, Turkestan, western China, and Siberia. Over



"Cross of a Pippin apple and Soulard crab. Presented to the writer by A. G. Tuttle in 1873. Believed to be the first cross of the wild and cultivated apple." C. G. Patten.



Cross section of above. From photographs dated 1889.



five car-loads of seeds and plants were brought back, including the Turkestan alfalfa, which has proven more resistant to cold and drought than the ordinary form of alfalfa, which was brought over by the Spaniards from northern Africa. The trip involved an overland journey in Asia of 1,300 miles in a wagon and 700 in a sleigh, the latter in the endeavor to reach the Siberian railway after snow came to check further work in exploration.

To explain my interest in fruit-breeding, I will say that since September, 1895, I have been working along this line at the South Dakota Experiment Station, coming to that state from Iowa, where eight years were spent with Prof. J. L. Budd, of the Iowa Agricultural College, and four years in commercial nursery work. Three years ago I had over a quarter of a million fruit seedlings on hand; I have not had time to count up lately. Many thousands of inferior seedlings are destroyed each year by fire. The material on hand includes native fruits from the Dakotas, Manitoba, Assiniboia, and other regions of the prairie Northwest, the best cultivated and native species from other parts of the United States, and from many countries of the old world. It will be readily seen that the possible number of combinations is endless. I will not weary you at this time with a full account of the work under way. My view-point was broadened by a horticultural study trip in the fall and summer of 1894 to Germany, England, France, Sweden, Denmark, Belgium, Russia, and Austria, followed by the exploring trip just mentioned. In August, 1905, I had the great pleasure of visiting Luther Burbank, of California, who is the acknowledged leader of us all in the field of inventive horticulture. I use the word "inventive" advisedly, because plant-breeding corresponds to the work of invention in the domain of the mechanical industries. Burbank above all men that I have met knows best how to make use of the old principle Darwin laid down: "Excess of food causes variation." And he is wonderfully skillful in detecting promising variations at an early stage of the plant's growth.

DE CANDOLLE'S LAW.

De Candolle writes, in the "Origin of Cultivated Plants": "The northern limits of wild species . . . have not changed within historic times, although the seeds are carried frequently and continually to the north of each limit. Periods of more than 4,000 or 5,000 years, or changements of form and

duration, are needed apparently to produce a modification in a plant which will allow it to support a greater degree of cold." This shows that the constitutional ability of a plant to endure a greater degree of cold cannot be changed by selection alone.

However, we know that nature has done a great deal of work in adapting plants to varied conditions of heat and cold. We know, by costly experience, that the box-elder from the far South and East winter-kills at the North, while the local form of the box-elder, which appears to be identical with it in all respects, is perfectly hardy. The Red cedar from the South is tender in northern Iowa; while the local Red cedar is hardy. Very many instances might be given from the experience of Northern nurserymen in America and government foresters in Russia. All this shows that such a work of adaptation by selection is possible for Nature working through ages, but is not a practicable piece of business for man to undertake. Conversely, I believe it to be a mistake to attempt to adapt plants from far North south of their natural limits. Professor Munson, of Texas, has found that our Northern *Americana* plums winter-kill in Texas, as they start too early in the warm spells of winter, which do not wake up the native species of plum. Russian foresters have found the Siberian larch tender in southern Russia, because they start too early; that is, they wake up earlier than the Southern form of the larch, and are caught by late frosts.

MENDEL'S LAW.

I will refer only briefly to the vast possibilities of this law. Mendel discovered that in crossing plants the characteristics are transmitted as a whole instead of being split up into intermediate forms, and that the rearranging of the characteristics appears to follow the law of chance; also that some hybrids can be bred true to seed. In fact, they are fixed in type at once but a little time is needed to separate the prepotent forms from those not prepotent. But in the case of our fruits we only need one individual, as we can propagate it by division later. It could be fixed from seed by carrying out the law, but this would hardly be necessary, except where it is necessary to propagate plants from seeds. This means that if we make crosses enough we will be apt to get an individual having any desirable combination of characteristics.

QUETELET'S LAW.

This law holds that any possible variation or sport will occur by the law of chance only in so many hundred or thousand

times. Hence, if we only have seedlings enough we will get the desired variation. This means that the larger the number of seedlings the quicker the results will appear.

DE VRIES' THEORY OF MUTATION.

Doctor De Vries, of Holland, after working for twenty years with over 100 species of plants, very recently startled the world of science by adding something to Darwin's theory of evolution. Instead of new forms originating by very gradual, imperceptible changes, the changes occur by steps or leaps. This is evolution by saltation—by hop, skip, and jump, so to speak. I have illustrated it by saying we must now consider evolution to be a kangaroo and not a snail. The changes that were formerly thought to necessitate thousands of years for completion may need only a few generations. In fact, a new species of plant or animal may appear suddenly, full-fledged, like Minerva from the head of Jove. This wonderful conception may only be alluded to here, but it has put a new light upon much of our experimental work, and we owe a great deal to Doctor De Vries for his persistence and genius in working out this new law of heredity. The modern plant-breeder rides in an automobile on the highway of evolution, and for the North, at least, the four laws just mentioned may be considered as four of the most important cogs in the machinery, if not the four main wheels.

HOW TO SECURE HARDINESS.

It is now quite evident from a survey of the whole field, that hardiness cannot be obtained by selection alone. This is the work of nature, not man, to undertake. It is unprofitable for him to begin a labor that takes many thousands of years for completion. But hardiness can be obtained by crossing with a hardy species. In other words, we can secure perfect hardiness of plant and excellence of fruit in the same variety.

As to hardiness being a Mendelian character, I know not. In our work of selection hitherto we have insisted on large size and good quality of the fruit as well as hardiness, which has compelled the destruction of thousands of inferior-fruited seedlings which were hardy, and in plants propagated by budding and grafting it has not been necessary to fix the type. That hardiness can be transferred by crossing with a tender species now admits of no question. For example, my hybrids of the wild prairie strawberry with the French ever-bearing type,

survive, while those of the French parental type winter-kill. The hybrid of western sand cherry with a Chinese apricot plum is hardy while the Chinese species (*Prunus Simoni*) is winter-killed.

The question arises, "What is hardiness?" Some fifteen years ago the Iowa State Horticultural Society had an investigation conducted to determine the nature of hardiness in the apple. Chemical examinations were made of the wood of hardy and tender varieties; the cell structure was examined under high powers of the microscope and the number of palisade cells in the leaf was investigated. All led to negative results. It would be a great advantage to be able to determine by chemical or histological examination as to whether a new variety of apple would prove hardy in our test winters, but we must regard the problem as unsolved. Hardiness can be transmitted; it is something intangible to superficial examination, but inherent in the plant itself.

The United States Department of Agriculture has extended the citrus fruit belt northward by hybridizing the cold-resistant *citrus trifoliata* of Japan with choice sweet oranges. This work is of the greatest possible value and incidentally illustrates this same possibility of hardiness being imparted by crossing with a hardy species.

APPLES.

The cultivated apple is a native of the temperate regions of Europe and Asia, and has been with us since the dawn of history. During that time it has been greatly improved in size of fruit, but it appears mainly to have been by the process of long-continued selection under cultivation. It is only in recent years that much attention has been paid to directing the work of improvement. Some people maintain that we should depend upon chance for all our improvement with the apple and other fruits, but this strikes me as being the lazy man's way of looking at it.

That our apples are not perfect may be seen from the low quality of some of our standard market winter apples. What a libel on the fair name of the apple some of them are as far as table quality is concerned! Some of our fruit-men say we should pay attention only to large size, high color, and long winter-keeping capacity. That quality counts for little with the general public may be true; it is nevertheless a fact that many consumers are beginning to discriminate in the market against poor quality of apples.

Not only do we need better quality in our market fruits, but also greater powers of resistance to the various fungus and insect diseases. Some varieties are practically free from scab. Other varieties are nearly free from blight. I have seen certain apples top-grafted with scions from the same tree; one would scab very freely and the other would resist scab. What is the use of using the squirt-gun on apples when we can get a variety that will resist scab? It is just as sure that we can get resistant varieties of apples as can be. I do not mean that we can invent a flawless type, but I do mean that within certain limits we can get a resistant apple.

The Northern Spy apple root was found to be resistant to the woolly aphid in Australia, and so on through the list. Here is food for thought and material for experiment. Over a large region of the west and southwest, where midsummer conditions often obtain during the late fall, when winter apples are receiving the finishing touches on the tree, it may be that we will not be able to supply winter apples without cold storage. The present race of cultivated apples demands a cool fall in order to keep long during the winter. Apple buyers know that the winter apples from Michigan and New York keep better than those from the southern states of the same varieties. Hence, it may be necessary to introduce a little blood of the wild American crab of the Mississippi valley, which, in spite of hot autumn weather, are true winter keepers. As for seedlessness in apples, there is no more reason why we should not have a seedless apple than a seedless orange, and the latter is already an accomplished fact. Nature has pointed the way by giving us seedless apples for at least 2,000 years past. None of them, up to date, however, have proven to be of any market value, being too poor in quality of fruit or having other undesirable characteristics.

There is a limit to the northward extension of the cultivated apple (*Pyrus Malus*) even by the hardiest representatives of the Russian race. This is very likely determined by the cold-resistant capacity of the indigenous race of *Pyrus Malus* in Russia itself. To extend the apple limit northwestward it will be necessary to hybridize with the pure Siberian crab (*Pyrus baccata*); this is now being done in many places. The work of Thomas Andrew Knight one hundred years ago in England would help in this work were it possible to find the hybrids of this ancestry which he originated at that time. However, from the thousands of seedlings of this parentage so far produced by design or as chance seedlings in the United States, we have not secured the winter-keeping capacity which is so greatly desired. To illustrate this need, I may add that the Minnesota

State Horticultural Society has offered one thousand dollars reward to the one who will originate an apple equal in hardness to the Duchess of Oldenburg, in size and quality to Wealthy, and in winter-keeping capacity to Malinda. So far the prize has not been awarded.

PLUMS AND CHERRIES.

For the prairie regions of the west some of the native species are eminently worthy of our consideration. At the north the native *Prunus Americana* plum reigns supreme, after plums from many parts of the world have been tried and found wanting. In a horticultural exploration tour along the Missouri river in the fall of 1904, near the north line of the state, I found a tree bearing plums one and three-eighths inches in diameter, and this is right in the wilds; under propagation the fruit will be considerably larger. The *Americana* plums, as represented by the best named varieties, are of excellent table quality.

So far I have fruited fully 6,000 plum seedlings of pure native parentage with some promising varieties as a result.

That our native cherries are susceptible to improvement may be gathered from the fact that in the plum-hunting trip just mentioned, I found bushes bearing fruit very nearly free from astringency, and much larger than the ordinary.

In the work of developing plums and cherries, the question as to whether pure-bred seedlings will in the end be better than hybrids with Japanese or European plums remains to be determined. In all such work, it must be remembered that the best results may not come from the first cross. Burbank has originated choice plums containing the blood of as high as six species.

STRAWBERRIES.

I am not sure that we have the best stock of the strawberry for this region. Our strawberries, as you know, are mainly of South American ancestry, with possibly a little blood of the wild Massachusetts and other eastern strawberries. The South American strawberry gave us large size but poor quality. Our wild berries are unexcelled in quality. Why not see what can be done with the local form of the strawberry from the driest part of the west? In Dakota I find trouble with hardness. After testing many varieties of standard strawberries, I discarded them in favor of crosses of the wild and tame. From 8,000 cross-bred seedlings some 225 were selected and given

further field trial. Last fall three acres of these seedlings were plowed under after selecting the best few for propagation. Two varieties have been sent out for limited trial elsewhere. The strawberries were never mulched; so have endured forty degrees below zero with the ground bare. They are my first approach toward the ideal "Farmer's Strawberry."

RASPBERRIES.

The history of the raspberry in the United States has been one of vicissitudes. The raspberries of Europe failed in the eastern states. The wild berries of the eastern states were next taken up and developed, and, under cultivation, soon gave us improved varieties. These were crosses of part native and part European parentage, giving us our present list of raspberries. But why should we be content with the work that is done in the eastern states? It stands to reason that our western wild type of the raspberry will be better adapted to our conditions. In South Dakota I have fruited thousands of raspberry seedlings, part of them wild seedlings under cultivation from various parts of the prairie Northwest, and part crosses of the wild and tame. I now have varieties of good size and quality which have endured forty-one degrees below zero without protection. One of these I sent out last year for the first time under the name of Sunbeam, because it appeared as a sunbeam when the outlook for hardy raspberries was dark.

HORTICULTURE ON CRUTCHES.

In conclusion, let me add that I do not believe in cultivating plants unadapted to our climatic extremes, and that must be coddled. Don't let us have our prairie horticulture on crutches longer than is absolutely necessary.

But we must deal in large numbers. From the ashes of millions of seedlings must arise, Phoenix-like, the "new creations" which will dominate our prairie pomology.

DISCUSSION.

Mr. Richardson: I would like to ask Prof. Hansen if he succeeded in getting a raspberry that will stand the temperature he mentioned?

Prof. Hansen: Yes, the Sunbeam, which endured 40 below zero one winter and 41 the next without being laid down, but the female parent was a wild red raspberry from Cavalier

county, North Dakota, on the Manitoba line, and the male parent was Shaffer's Colossal, a purple-colored New York variety. In fruit it favors the Shaffer's Colossal, but the plant sprouts freely. It has never shown the least sign of winter-killing; in hardiness it appears equal to that of the native wild parent. Now, the point is this, I believe you can get any combination of characteristics in one plant, including hardiness, by making crosses enough. As for an Indian corn that will endure cold, none is known; but the season has been shortened. In Northern Europe where they have cool summers Indian corn is raised as an ornamental plant, they do not attempt to raise it as a cereal. If you can originate corn that does not need semi-tropical heat for a short time, you will do more than the Indians did. They carried corn north on this continent from Central America and Peru where it grows twenty feet high, and takes seven months to ripen, northward by selection for early maturity up into Manitoba where it ripens in three months and grows five feet or less. It is simply shortening the season; they have never originated a corn that will endure cool nights and cool days, it must have a high degree of heat during a part of the time.

Mendel's law opens up a wonderful field in animal and plant breeding, a field so great that we realize but dimly its possibilities. For instance, in my visit to Cambridge University, England, last summer, I found they had taken a wheat very susceptible to rust but productive, crossed it with a rust resistant variety from Manitoba, and both of these desirable characteristics were combined in one plant; furthermore, the rust resistant characteristic was transmitted according to Mendel's law. Mr. R. H. Biffin also crossed the best variety of wheat from Manitoba that has excellent milling quality with a very heavy yielding variety of English wheat; and secured these two good characteristics on one plant. It will probably revolutionize the wheat culture of England. Dr. Boteson and his many assistants at Cambridge University, England, maintain that you can get any combination of characteristics in one plant, providing they do not conflict, if you hybridize enough.

Sometimes striking variations appear in seedling plants which are not transmitted to the next generation. These are termed fluctuating variations. Genius in human history is usually a fluctuating variation; it is not a mutation, because it is not transmitted. So it is with plants, certain characteristics appear that cannot be transmitted from seed. Seed of a choice apple, for instance, may give us seedlings running back to the wild crab of four thousand years ago. Hence we must propagate apple trees by grafting or budding and not depend on the seed.

Mr. Patten: Do you believe that you can breed for form of leaf and plant—any character of leaf and plant?

Prof. Hansen: I believe so; any characteristics that go to make up a plant can be transmitted; any combination of characters not conflicting or incompatible, if you make crosses enough.

Mr. Patten: That is, the size or perfection of the leaf as a whole so that it will resist any unfavorable conditions in the summer season?

Prof. Hansen: Yes, I think so, I think your own apple seedlings show that, as you select for perfect foliage, and for persistence in holding the fruit in trying seasons.

Mr. Patten: Do you think that can be done without crossing?

Prof. Hansen: It might be possible, I think, to get it without crossing, but we have to wait for nature to do the crossing or for a mutation to appear. Crossing introduces new elements of variation and hence hastens the work of evolution.

Mr. Patten: If you dispute the fact that form and size and color and everything of that kind be developed, can not be produced, you dispute the whole law of heredity and if you breed a thousand plants or one hundred plants and select from that hundred plants the most perfect leaf, the one that endures all the unfavorable conditions of the summer season, that is the plant certainly that will tend to make your plants hardy, will it not, it will tend to make it an enduring plant. The next feature then that you must add is breeding a plant that will ripen its leaf in the proper season, according to the latitude in which it is, and that also will tend to this property of hardiness, which is only a sort of an accommodative term expressing the general fact of the character of the plant,—this word hardiness. As I said, adaptation is the word, the word hardiness does not meet the question at all in my opinion.

Now, then, I want to call your attention to the Turner raspberry. The Turner raspberry has endured thirty-five and forty degrees below zero and come out in very good condition. There is no one of those eastern raspberries of the older varieties that have been on the market for years that will endure a temperature of more than twenty and survive so that you can get a crop from them at all. We have the Snyder blackberry, for instance, that is a comparatively hardy blackberry; I have never been able to select a blackberry from the forest in northern Iowa that would compare in hardiness with the Snyder blackberry, so that we see with these plants, so far as we are able to judge, that they have developed a degree of adaptation to the climate in which

they have appeared. The Turner raspberry appeared down here in central Illinois and we have developed nothing here unless it is the King raspberry and I believe that was up near St. Paul.

Prof. Hansen has not covered the ground, he has not answered the question with reference to this catalpa. This catalpa, so far as we know, inherited the hardiness of latitude of Virginia, it has been there for ages and ages past; and yet, under the hand of man, with the distribution here in a short time, without any effort on the part of man, as you might say, it has gone from three hundred to four hundred miles north and I have them on my own grounds, and I have demonstrated that by taking those seedlings that first came here from Indiana, and selecting seeds from those seedlings, that I have increased in one generation those plants nearly fifty per cent. in hardiness. Now, they had nothing but merely to become hardy, simply pure *Speciosa* seedlings and nothing else and Prof. Sandsten over here just turned around and called my attention to the fact of corn. Gentlemen, the fact is that we have not done anything yet that we may do. I thoroughly believe that we can treat corn in fifty years so that it will endure a temperature of six to eight degrees more than any corn that is known to-day, and I want to refer now to two instances where this matter has come under my observation with reference to corn. I happened to be out in Dakota a few years ago when we had a very severe frost on corn, that was about twelve to eighteen inches high, and there was more than an acre along the lower part of the field that was almost wholly killed by frost and there would be one spear each in a hill that would be exempt from frost, all the others would be dead and it was not an exception, there were dozens of them. Had I been an agriculturist or an experimenter on an agricultural farm, I would have examined one hundred thousand of those corn stalks,—there would be, for instance, two killed, one partially killed and another scarcely touched, and so it was over an acre of ground,—and I would have saved those that survived. I believe when we come down to work that we can breed a corn that will endure six to eight degrees at least more than any corn in existence and easily done, because we can repeat it every year by planting corn early enough to be killed by the frost.

Prof. Hansen: Last fall I saw experiments along this line in Lapland, north of the Arctic circle at the experiment station at Lulea, northern Sweden. They had two refrigerating houses, one for cooling, the other for freezing. Here I found barley which grows further north than any other cereal, grown in boxes of earth. These are taken in different stages of growth and frozen or frosted; then the seed is saved from the plants that

live through the severe test. This is the only place in the world where such work is being done with cereals. The only other work I can think of is at the Rhode Island experiment station where they are freezing up beans, I believe, and taking the seed from the plants that survive, if any survive. I am not saying that it cannot be done with corn; although they have not made any progress all over northern Europe in three centuries in adapting corn to a cold climate. It seems to demand a certain tropical heat for a short period. But it can get along with a shorter period of heat. Take the case of the crab, apple, cherry, grape and raspberry; we have not secured a hardy variety in several centuries from the original stock brought over from the mild, moist sea coast climate of western Europe.

As for hardiness, answering Mr. Patten's remark, hardiness is only one factor of adaptation. It may mean resistance to cold, that is the way we understand it chiefly here, but real hardiness means also the resistance to heat, drouth, fungus troubles and all that. We can get all that by crossing or by straight selection if we raise enough seedlings. We may obtain almost any combination. I believe that Mr. Patten has done some magnificent work with his apple seedlings. We cannot tell beforehand just what the combination is that will make "the Shakespeare of the species," as I have called it. That is the one plant we are after; Shakespeare appeared only once in the history of the human race and we are after his equal, figuratively speaking, in the apple line. We do not want any local author, we want the best. As far as the climate is concerned, Prof. Munson of Texas has learned by repeated trials that our selected northern wild plums winter kill in Texas,—they wake up too early. That is another feature of adaptation, they are too far north. In southern Russia the Siberian larch is a failure in the south because it starts too early. As far as the Turner raspberry is concerned, it stood fairly well in Dakota until the early '90s, then the dry seasons came on and out they went. The Turner went out with me at Brookings, it is worthless and tender. It may bear fruit once in a while when very carefully protected, but it is off the list. We have tested the Snyder blackberry, it also is an absolute failure. All the blackberries are failures. All eastern raspberries have failed, standing out on the open prairie away from the shelter of Minnesota woods. The only raspberry that is going to win out will be of pure native stock, or hybrids of the cultivated with the wild raspberries of the northwest. The surest, quickest and very likely the only way to get hardiness into a tender species, is to use a hardy species in crossing, because thousands and tens of thousands of years have done the

work which you cannot do in your lifetime. Don't start on a ten thousand year job in your work in acclimating tender plants.

Prof. Sandsten: I want to refer back to the corn incident. I think Prof. Hansen misunderstood me. I did not mean to say that corn was standing frost, but I thought I made myself understood by saying that corn can be matured with several degrees less heat now in the northern part of this state than it could fifty years ago. That is to say, if an ear of corn will ripen with a less degree of heat in northern Minnesota to-day than it could fifty years ago, it does not require as much heat as it did previously. I do not mean to say that it can stand the frost, I hardly hope to live to see a corn plant endure the frost. I also realize that Prof. Hansen has a different problem before him from what we have, it is not only the question of temperature, but it is a question of drought. We may have a temperature of forty below zero in Wisconsin and not kill some of our plants, while the same temperature would kill the same plants in South Dakota, because they have the droughty condition that we have not, and he has a problem to work out entirely different from ours and he may be right in his ideas of hardiness of obtaining it from the native stock. But we have also found this thing in our native crab apple which we call so hardy, that it is not any more hardy than many of our hardy apples taken to Texas; many of them die there.

Mr. Toole: This society never had such a waking up on the subject of plant-breeding and we have so many thoughts to carry home with us to help us along in planting for future work. But if we take everything for granted as proven, every theory that we have heard, we might be discouraged in the enthusiasm we have shown and with which we expect to carry on our development of a winter apple and a more hardy winter apple than we have. But we have great encouragement and so much has been given to us in what has been developed in the seedlings and what we find from getting the history of apples shown at this meeting, that I think we do not know really what latent hardiness is stored away in some kinds of apples that we have been breeding and I do not think we need to be the least bit discouraged in this part of the United States in going on and breeding through selection and crossing, without any hybridizing whatever.

Mr. M. S. Kellogg: I would like to ask in regard to the work of the trial orchard, from what class of trees have the scions been taken from which these trees have been grown? Have they been from any carefully selected scions, or have they been indiscriminately selected and indiscriminately grafted?

The Secretary: Mr. Kellogg can answer part of that, because some of the stock was taken from his nursery.

Mr. Kellogg: That is just the point. If we are going to attempt to confine ourselves to a selection of varieties and a selection of scions in this grafting, we have got to put the price of nursery stock up where you cannot touch it with a ten-foot pole. But if you are going to graft indiscriminately, you will have to take what the nurserymen have and sell to you at prices that they think are remunerative.

Prof. Sandsten: I think there is some truth and philosophy in that, yet I hardly think the price ought to be made so high that we cannot reach it with a bamboo pole. I think there is a reasonable limit to it, and I think if the nurseryman will sell his trees for thirty-five to forty cents apiece, he can afford to select his scions and not get the scions in the nursery. Not only that, but to have some one else cut them for him, who does not know one tree from another. We would hear less to-day against the nurserymen in this state if the cutting of scions were done more judiciously. I mean to say that so many trees are sold under the wrong name, and it is hurting nurserymen a great deal and it would be better if the nurserymen would charge thirty-five, even fifty cents a tree at retail and sell farmers trees true to name, they would be better off. I have letters almost every day from farmers saying: "What can we do, we never get a tree true to name?" Not always, but in most cases. That is a thing that nurserymen can remedy by being careful in cutting the scion and I believe that the nurseryman ought to have an orchard and cut his scions from bearing trees if possible. I am not advocating that strenuously, but I think they can get trees true to name.

Prof. Hansen: Just a word from the standpoint of European nurseries. We regulate the output and price and quality of the scion. Sometime when we get a little more sense and we have wasted a little more money, we will establish this fact, that the nursery business is a profession and men who go into it should be regulated and submit to regulations just the same as anybody else; that would enforce honest competition. Now, your whole fraternity is suffering from dishonest competition and you are the biggest set of chumps to submit to it. (Applause.)

THE SPENCER SEEDLESS APPLE.

A Member: I would like to ask information about the seedless apple.

Prof. Sandsten: Mr. President, I know a great deal about it and I know very little. I know some of the history of it and if Mr. Jewett is here from Sparta he might be able to tell us just as much as I can. The history of the seedless apple as I have it direct from Mr. Spencer, the man who has introduced the Spencer seedless apple, is something like this: I think it was in the 50s when a member of the Wisconsin militia brought the apple, or some scions or trees, from Virginia. It was planted in the western part of this state by Mr. Waters, and he grew a great many of them, several thousand grafts were put out and Mr. Waters never paid any attention to it. Mr. Waters, by the way, was associated with Mr. Jewett of Sparta. But the apple was practically lost, so when Mr. Waters moved to Colorado he took a few apples with him and he gave to his nephew, Mr. Spencer, some of these apples. After a period of time, Mr. Waters moved to White Salmon, Washington, where he is living to-day at the age of eighty-five years, and he took some plants with him to Washington and he grew some trees and there are trees now growing in Washington. I have had several letters from Mr. Waters and he sent me some of the scions of the trees growing in Washington, and he also sent me a box of the seedless apples grown in Washington. At the same time I received a box of apples grown in Colorado. Now, the apples were identical, there is no difference in them at all, and it was undoubtedly the same apple. It is not a wonderful invention by Mr. Spencer in handling the same, it is a plain fraud and Mr. Waters says he is not surprised at it that it should be that way. Evidently he can explain it no other way than by saying that Mr. Spencer probably thought that he was dead and buried and that no one knew of the seedless apple, but Mr. Waters came to life and lived to see the fraud. Now, the apple is selling all over the country and Prof. Fletcher told me that thousands are being sold in Michigan. Fruit growers and farmers paid two dollars apiece, some company is established in almost every state and in Canada, selling these trees at two dollars apiece and they are not worth two cents apiece. Now, it is right that the public should know the circumstances of this company and the value of the fruit. The apple is as poor as any Ben Davis,

it can be used for a baseball just like the Ben Davis can, and it is all right for keeping qualities, as no one will eat it. The tree is a fair grower. In our experience with them, our grafts grew two feet in one season, grew very vigorously, but the apple has no value and it is certainly not worth two dollars apiece; might be worth ten cents to us as a novelty, but the trees should not be bought.

The Secretary: I want to say a word to emphasize what Prof. Sandsten has said in regard to the seedless apple. I also had correspondence with Mr. Waters and I want to add one word to that. I received samples of the Waters' Seedless and samples of the Spencer Seedless, and I pronounce them identical, it is the same apple beyond a doubt, and if you recall one of the claims made by the Spencer Seedless apple companies, it is this, that the apple was codling moth proof and that the worms did not attack it. Out of the eight apples that I received from Mr. Waters five were wormy, and out of the five which I received from the Spencer Seedless orchard, three were wormy and that is a pretty fair proportion, assuming those from the Spencer Seedless orchard represented the average quality. I photographed those at long and short range, upside down and inside out and I have pictures of all of them.

Prof. Sandsten: The worms have very poor taste when they go into a Spencer Seedless apple.

Mr. Jewett: I wish to say that the professor has given the exact facts in the matter of the Spencer apple.

Mr. Patten: I wish to say that I suppose Prof. Sandsten meant no reflection on the Ben Davis apple when he referred to it as a baseball apple. He, I presume, intended to say a Wisconsin grown Ben Davis.

The Secretary: I want to ask the people here if any one knows of a Spencer Seedless apple company in Wisconsin. I understand that a branch of the company has been established in this state. Is there a branch company in Wisconsin, does any one know of any company selling the Spencer Seedless apple in Wisconsin? If so, I would like to know about it and I think Prof. Sandsten would like to know about it also; if the agents are at work, I am sure I would be glad to be informed at any time, and I think the horticultural department of the university would also.

Mr. Rosenow: I got the information from a salesman that it had been around our way and is working Oshkosh county and he is distributing circulars and making large claims for the Spencer apple. Just a few weeks ago he was around that way.

Mr. Melcher: I met probably the same agent as Mr. Ros-

enow. I might say, he is advertising them in the local papers and I think he is doing considerable business.

Prof. Hansen: The Seedless apple is an interesting topic. It is a very old thing, hundreds of years old. These Seedless apples bob up in every generation; there is not one of the lot that is of any account. I was talking with the United States pomologist last December and he thinks it is simply a renaming of the same old varieties that have appeared heretofore. It is a fraud, the best you can say for it, and I hope it can be stopped before it goes further.

A PLANT BREEDER'S TRIP THROUGH SIBERIA AND AROUND THE WORLD.

By PROF. N. E. HANSON, South Dakota State College of Agriculture and Mechanic Arts, Brookings, South Dakota.

The principal object of my third trip to Russia, from which I returned January 2nd of the present year, was to trace the northern limits of alfalfa in Asia. The journey began June 28, 1906, and the six months' journey turned out to be a trip around the world, ranging in latitude from 70 to 20 degrees.

One of the objects of Hon. James Wilson, Secretary of Agriculture, in his work in agricultural exploration, is to conquer "the Great American Desert" by the introduction of economic plants from similar climates of the old world. In 1897-98, as part of this work, I made an overland journey of 2,000 miles through Turkestan, western China and southern Siberia; as one result of this adventuresome effort, Turkestan alfalfa was imported to America for the first time and its northern limits traced in the overland journey. On this second trip to Siberia, I took up the broken trail where I left it and followed where it led which proved to be clear across the continent of Asia. The interesting fact was brought out that where the blue flowered alfalfa stops, the yellow flowered species are found extending from 1,000 to 2,000 miles further north across the continent. As they are excellent forage plants in dry sections, it seems to indicate that the alfalfa belt will be ultimately extended in North America as far north as we may care to farm. Not an ounce of the seed is for sale anywhere; all the seed was

gathered from wild plants on the Siberian steppes. Some tap-rooted Siberian clovers were found in this same region, also other promising forage plants.

It was a great privilege to attend the International Conference of Hybridizing and Cross-Breeding in London, and some remarkable advances have been recorded since the last International Conference four years ago, which I also had the honor of attending. Some three years before this time, the present series of Conferences of Plant Breeders was begun in London by the Royal Horticultural Society. In about four years from now the next Horticultural Conference will probably be held in Paris. At the New York Conference, Dr. Bateson of Cambridge University, came from England to tell us about Mendel's Law of Heredity, recently re-discovered. Since that time the work of demonstrating the applicability of this law has been going on vigorously in many parts of Europe, with Cambridge University in the lead.

Briefly it may be stated that in the crossing of two distinct varieties of plants, say A and B, the opposing characteristics are either dominant or recessive and arrange themselves by chance in equal numbers of AA's and BB's, say 25 of each in each 100, with 50 AB's. The AA's may be called dominant, the BB's recessive, and the AB's heterozygote. AA's or BB's are fixed in type at once; the AB's can never be fixed because they split up again in the next generation. All are apparently alike in the first generation, but the unknown character of each can be demonstrated only by testing their reproductive power. This shows at once which are true to type and which are not; in other words, the type is fixed at once without going through a long process covering many years of laborious selection. It appears the law applies to animals also, and animal and plant breeding in Europe and America will henceforth be put upon more of a scientific basis by this new law. In the exhibit from Cambridge University and elsewhere was shown a remarkable series of specimens showing the applicability of this law in the breeding of plants and animals, such as sweet peas, stocks, garden peas, corn, wheat, mice, sheep, horses, moths, snails, and so forth. Furthermore, the law applies to intangible things like disease-resistance in plants and to milling quality and high yield in wheat. It appears probable that the animal and plant breeding of the world will be greatly modified as to methods by the application of this law of heredity.

The problem of the English wheat breeder has been to combine the high milling qualities of the American wheats with the high yield of the English wheats. The American wheats, with

their superior and strong milling qualities, are not liked by farmers in England because of their low yield in the English climate. The attempt is being made, however, to originate varieties which combine the superior milling qualities of the American wheats with the high-yielding power of the English wheats, and with excellent prospects of success.

In two years these new varieties will be ready for distribution. The work is being done at Cambridge University in England. In a visit to Cambridge University, I noticed some interesting work being done in the cross-breeding of sheep, showing that Mendel's Law holds good for sheep as well as sweet peas, also in the breeding of poultry. The problem, however, becomes quite complicated at times because some qualities are inherited in pairs ("genetic coupling") or even higher numbers, so that large numbers are necessary to make clear the law.

Dr. Bateson, in his address as president of the Conference, named this new science "Genetics," which is a shorter word than Artificial Evolution and Thremmatology which had been employed hitherto. Dr. Tschermack of Austria also enriched the science with the new work "Kryptomer" by which is meant the hidden quality transmitted in a dormant state to the next generation.

The Royal Horticultural Society offered royal hospitality to all foreign delegates throughout the meeting. The seat of honor at the great banquet was given to your delegate from the United States. The English nobility was represented in goodly numbers at the banquet, and garden parties or lunches were also given by Sir Lawrence, president of the society, Baron Rothschild, and the London Horticultural Society.

In my paper on Breeding Cold-Resistant Fruits, I tried to illustrate the point that it is possible to transmit resistance to cold by hybridizing hardy with tender species of plants, and told of the work in this line in South Dakota.

A large number of other extremely valuable papers were read at the Conference, but lack of time at present prevents any fuller details.

There has been a big boom in England in the way of disease-resistant potatoes and prices went to a fabulous height. This question was discussed at the Conference and I afterwards investigated the question elsewhere in England. The boom collapsed a few months ago, and the much boomed varieties, "Northern Star" and "El Dorado," fell from their high pedestals when put to actual field trial. However, substantial and accurate work is being done in developing the disease-resistant varieties of the potato, and full success is only a question of

time. The work henceforth will be done upon a rock bottom foundation and no more balloon voyages will be possible for the British public. The dream of the potato-breeder is to originate a variety proof against the blight which caused the potato famine in Ireland some sixty years ago. The man who succeeds first will be indeed a benefactor to the race. Other species of potatoes are being imported from various regions of the world and many crosses are being attempted.

After leaving England, the experiment station work of Denmark, Norway and Sweden was studied, including the far northern part of Norway and Sweden called Lapland, north of the Arctic Circle. At Lulea, Northern Sweden, some remarkable work was being done in originating varieties of cereals, especially barley, capable of enduring frosts at critical stages of growth. At Svalof, southern Sweden, I found that the principle of mutation had been recognized in the course of extensive experiments in originating new varieties of cereals. The many excellent varieties already obtained, we may now consider according to De Vries to be elementary species, isolated from systematic species. The varieties obtained are remarkable for uniformity of type. At all of the experiment stations visited, De Vries' mutation theory was recognized as being of primary importance in plant-breeding and animal breeders must recognize its equal importance in their work. The journey was continued through Finland, European Russia and Siberia, the homeward journey being via Japan.

In Russia in 1894 I remember visiting the estate of a prince who owned 210,000 acres of land. On this estate there was a potato patch of 1,000 acres which were used for the manufacture of alcohol. At that time we could make no use of such varieties but with the free alcohol bill, a wide field is now open. In Russia certain varieties of potatoes have been found to be high in starch content, too coarse for table use, very productive, and found especially suitable for the manufacture of alcohol. They are also used in stock feeding. Seventeen barrels or casks of these varieties were obtained for trial.

In visiting Russian nurseries I found that the question of root-killing of the apple has become more than ever an oppressing problem. Some of the Russian nurserymen have been slow to adopt the Siberian crab (*Pyrus baccata*) as a stock for the apple, because the seed was not readily obtainable, and they could get the French crab seed from France very cheaply. By French crab is meant the same species as the cultivated apple (*Pyrus Malus*). Recent severe winters however have caused such extensive losses that these nurserymen have come to the

conclusion that Siberian roots were necessary. *Pyrus baccata* is the pure Siberian crab; the old Yellow Siberian is a large fruited variety of this species. *Pyrus prunifolia* is also a North Asiatic species and is considered by some American authorities to be a hybrid of the *Pyrus baccata* with *Pyrus Malus*. In the cultivation they are represented by such hybrid crabs as Transcendent, Minnesota, Hyslop, Whitney, Virginia, Early Strawberry and Florence. I presented this theory as to the hybrid origin of *Pyrus prunifolia* to many while abroad but the general opinion was that it was a pure species and not a hybrid. Some favored using *Pyrus prunifolia* because its budding season was longer than that of *Pyrus baccata*. As to relative hardiness, *Pyrus baccata* is no doubt hardier than *Pyrus prunifolia* as it ranges further north. But for a large area of our prairie Northwest both species will probably be hardy enough.

In the course of the journey many other seeds and plants of agricultural and horticultural interest were obtained. But this paper is long enough now.

The trip was a rough, adventuresome one, with political and social conditions very unsettled. Personally, I have always found the Russians a hospitable, courteous people, who have a great regard and friendship for America and Americans. The trip was not an easy task, but I found the plants whose existence I suspected nine years ago, and it is a great satisfaction to feel that in all probability it will advance northwestern prairie agriculture, and especially in the newer regions of the western Dakotas.

Some of the plants may help Wisconsin and wherever trouble has been experienced with winter-killing of the common alfalfa. It is worthy of note that many of the failures in farming in the semi-arid regions of the west are due to the fact that the plants cultivated were from Western Europe; in other words, it is unwise to farm in a dry climate with wet climate plants. In like manner we may say that it appears to be an undertaking fraught with disappointment to attempt to acclimate an alfalfa originally from Northern Africa to the cool moist climate of Wisconsin. Some of our efforts at acclimating plants really means that we are undertaking a job that nature has taken some thousands of years to accomplish.

STRAWBERRY REVIEW.

M. S. KELLOGG, Janesville.

“Tis hard to say, if greater want of skill
Appear in writing, or in judging ill;
But, of the two, less dangerous is the offense
To tire our patience, than mislead our sense.”

Mr. President, Ladies and Gentlemen: If in the few minutes that shall be taken at this time to listen to a short review of the past season, and one of the virtues of this review will be its length, I shall perhaps trespass on your good nature to repeat that which has been said so many times before in the meetings of this honored Society and of others but if I “tire your patience,” I will endeavor not to “mislead your sense.” If that which is said shall be a repetition of oft told truths, bear with me, and remember that perhaps there is a “doubting Thomas” here who has not heard, or having heard did not understand the successful methods of Strawberry culture.

Plant injury 1905-6 and cause. There is in the writer's estimation but three causes that entered into the so-called winter-killing of Strawberry plants, during the winter in question. First is a failure to properly cover the plants; second a lack of moisture to be found in the soil at the time the ground freezes up for winter (and this had very little to do with injury during this winter as the rain fall was quite plentiful the fall of 1905); third, the long continued spell of soft weather, lasting from about February 20th until April; during these several weeks only rarely did the ground remain frozen for two nights consecutively without the frost coming out during the day to the depth of several inches. This long continued and extreme changing of temperature sapped the vitality from the plants to a greater extent than any winter since 1898-9, when the destruction of fruit trees, plants and vines was so wide spread. Strawberry plants came out in April, 1906, with no green leaves whatever, all growth having come up from the buds, weakened by the causes already given. Another governing cause for the injury will be found in the fact that the summer of 1905 was very dry and that plants did not make the usual growth, or have the usual vigor and length of root, so they were more easily heaved out of the ground during the trying weather of February and March, 1906. In the southern part of the state, we

are only twelve miles from the Illinois state line, plants went into winter quarters in fairly good shape. Without question some of the cases where injury was shown was by lack of proper covering, or at least lack of proper attention to see that the covering remained where it was applied. The only way in which we were able to determine if our plants were injured last spring was in the number that failed to grow in our new plantings; this was about 5 per cent., somewhat larger per cent. than usual, and from reports we received from our customers and others we must conclude that the loss of plants last spring was greater than for several years. We had no fruiting beds left from our plantings in 1905 as we dug all the beds out to supply our plant trade.

1906 crop and prices. The crop with us was about three-quarters of a full crop. Berries began ripening about the first of June, marketing began on the 12th; the season reached its height on June 23rd and closed on July 7th. The quality of the fruit was from fair to good, and prices ranged firm and good. Season opened with price at 12½ cents, and reached the lowest point at the height of the season, at which time good berries were bringing 8 cents per quart at wholesale. Taken altogether the prices were very satisfactory, and taken with the fairly good yield, growers fared pretty well in our section.

Most profitable varieties. This much mooted question will no doubt provoke lively discussion, and the writer would have accepted the subject assigned to him with fear and trembling had he known that this was to be the only paper on Strawberries during this meeting. The five most profitable varieties with us, would be as follows:

Senator Dunlap, which easily heads the list, Clyde, Bederwood, Warfield and Lovett.

In connection with this list of five varieties it must be remembered that our soil is black prairie loam, and lays pretty level, yet has sufficient drainage so that surface water seldom stands on the land. The list would without doubt be varied on the different soils and perhaps with different culture. We plant our Strawberries four feet by two and mark the field after the same has been well prepared by fall plowing, followed by spring plowing and harrowed to a fine tilth. The marking is done with a light wood marker, similar to the old fashioned corn marker, drawn by two men and guided by a third. The cross marks are made with a similar marker with the teeth two feet apart and then plants are set where the marks cross. Care is taken that the crowns are not too deep nor too high and the field is cultivated at once. We use a spade to open holes in setting, having found it the most satisfactory tool for that purpose. Re-

member three things are necessary in strawberry growing, these are cultivate early and often, then cultivate again, and finally during the hot, dry summer months cultivate all the time. Where plants are rowed both ways it does away with a large part of the hand work and reduces the cost of caring for an acre up to the time of fruiting. When the runners get 8 inches long it is time to stop cross cultivation and begin to prepare your bed for fruiting by laying down the runners. The early plants make the strongest fruiting vines, and it is to your advantage to have as many early ones as possible. We practice, as nearly all plant growers do, the matted row system, and have found that this system answers all needs where the two objects are fruit and plants.

The past season we had no new beds to fruit as we dug out all of our 1905 plantings for the plants, so these observations have been from old beds fruiting the second and third time.

DISCUSSION.

Mr. Daub: Mr. Kellogg made a statement that he thought it was frost and winter kill that caused the injury and also lack of covering. Now mine were thoroughly covered; I had about three tons of straw to the acre and they froze out or died, I don't know which. There was no lack of cover on my part. I live in Eau Claire, in the northern part of Wisconsin. We have plenty of moisture, plenty of snow, they were never exposed all winter until the spring thaws, and the spring thaws were not very injurious to our plants. And I noticed at the same time in some of our places where men had not covered their plants at all, on side hills where they were wind swept and yet they lived and were thrifty. Those were a few exceptions. Now if they were winter killed, it looks to my mind as if those were the ones that ought to have suffered. I am speaking particularly of one piece that was exposed at the north-west where we get the severe wind, the snow had been almost entirely removed by the wind and that was one of the few pieces that existed in the spring and yielded a big crop and some of the covered fields failed to a great extent.

Mr. Turner: Might it not have been too much mulching and a large amount of snow that must have smothered the plants in Northern Wisconsin?

Mr. Richardson: I do not think it was, because we have had sections of our land that were covered with snow that thawed

and they were frozen in in the ice and those would come out in better condition than some with covers, so I do not think it was smothering.

Mr. Toole: Our strawberry plants in Sauk county suffered badly with winter killing and the clover also and we think it was with too much covering and that was with ice. We could see with our clover and alfalfa wherever the ice under the snow had been anchored, there they suffered the most. Mr. Pearson is here and he can tell about the conditions that he suffered very badly with last winter.

Mr. Kellogg: Do I understand Mr. Richardson to say that their plants on which the water was standing so that the ice formed above the plants came through in good condition?

Mr. Richardson: Yes, we have had a section of our field which froze solid.

Mr. Kellogg: Please tell us what kind those were.

Mr. Richardson: Warfield and Senator Dunlap.

Mr. Turner: In every instance where the ice covered the strawberry plants in my field, they died.

Mr. Pearson: I am not very anxious to discuss this question as it is not a very pleasant subject. I found considerable injury in the spring and found that I had to cancel several hundred dollars worth of orders for strawberry plants. It is not a pleasant subject to contemplate, and I have tried to find out what the cause of the injury was, but I have about concluded that it was ice, because where there was deep snow after a rain, where the snow had blown into the ravines and held the ice off the plants, they were not injured; where the ground was bare when that rain came and the ice froze onto the plants, they were packed very closely in the dirt and the leaves seemed to be dead in the spring and I concluded from that that it was the ice that killed the plants.

Mr. Post: In regard to the ice subject, if water forms over the strawberry bed and the water is sufficiently cold to freeze that ice solid down to the ground and the frost remaining in the ground, it will invariably kill the plants, but with a sufficient quantity of water under the ice, the strawberries will live. That has been our experience for twenty years.

Mr. Daub: I can corroborate the statement of the gentleman, I believe he is right.

Mr. Hutchins: I am not a strawberry man, but I am very much like the man Mark Twain tells about who never had any children of his own and who had given the subject a half hour's consideration and felt qualified to give impartial advice to parents. That is somewhat the case with me in regard to straw-

berries, however, I find from the discussion which I find quite animated in different places, that it is agreed among strawberry men that it is partly due to what is termed "root rot." I have heard in different places of this disease of plants. The President of the Michigan Horticultural Society, Mr. Cook of Owosso, is quite a large strawberry grower and of late he has had a great deal of difficulty with this injury and Professor Taft of the Horticultural College of Michigan has dealt with it and while so far as I am aware they have not traced the difficulty, that is, they have not located it, have not diagnosed it completely, still they are inclined to attribute it to the root rot. It is quite possible that you have the same difficulty here.

Mr. Smith: We have been raising strawberries for a good many years and lost one half or more of our plants last spring. I think in every case where the winter rains came and melted the snow, as was the case a year ago, after nearly every snow we had a rain which melted most of the snow and then it froze and wherever this ice formed over the plants, as has been stated, the plants were dead and I have never known it to fail, in all the years we have worked, to kill strawberry plants if water gathers in the winter over the plants and freezes down to the ground. I was foolish enough to follow the advice of people who advocate unqualifiedly setting the rows the long way of the ground. It is a great deal easier cultivating and a great deal easier picking, because you will not have any after such a winter as last year. We lost one half of our crop practically as a result of having the rows set lengthwise of the bed. In cultivating, the cultivator will of necessity (and it is impossible to avoid it, I think) make slight ridges, perhaps not over an inch high or two inches high at the sides; I speak of level land now, not rolling land. Our land is level. The ground on the sides is a little higher than the middle and with the rows set lengthwise the water cannot get off, where we have those winter rains. The result was that it lodged in many places, not from improper drainage, but simply from the result of the cultivation, held the water back, flooded in spots all over the field, and the result is destruction. Whereas, if the rows had been crosswise, the water would have followed down those little furrows and gone into the ditches.

Mr. Hager: I want to put in a word here in regard to my experience and what I saw in my immediate vicinity. I saw small beds where the water had stood and had frozen up solid and stayed so all winter and the plants were in good shape. I saw beds well mulched on rolling land, light, porous soil in which they killed absolutely and I want to say in regard to my own beds, some of the plants outside of the mulching. We put

our rows four feet apart, having a matted row of about sixteen to eighteen inches. We aim to cover or mulch the matted row but in some instances they were not all covered and there were a few plants sticking out of the mulch and in some instances those sticking out were alive and those under the straw were absolutely dead and I have come to the conclusion that there was more than one thing the matter, that it was a combination of circumstances, because I cannot explain the various conditions with any one thing, and I am inclined to think that it was a disease as much as it was climatic conditions, for the reason that when we came to dig plants we found so many of the plants that were apparently alive, with a green top, but the roots were black, or partly blackened, and I am of the opinion that it was more than climatic conditions.

Mr. Kellogg: There is no doubt quite a difference between conditions that exist in our locality in the southern part of the state and those toward the northern part of the state. The gentleman stated that the leaves showed green in the spring and the roots were dead. With us the leaves were all dead when we uncovered them, they were all simply left in the bed and our loss has been somewhat in excess of the average. It was done gradually, so that it leads us to think that what injury we suffered was by the soft weather in February and March, alternating with frost. They were pulled up by the roots and they stood looking like a spider trying to find some place to go.

Mr. Crawford: I remember having a patch some years ago that was under water for perhaps a week at a time, the children skating over it and then the thaw came one day; it was under water again the same winter, frozen again with the skating rink the second time, and when spring came the plants were just as healthy as could be.

Mr. Van Loon: We had an experience last winter different from any proposition that we ever undertook in the line of raising strawberries. We were fortunate enough to have the largest part of our beds planted to the Senator Dunlap strawberries; a few rows, perhaps three or four of them, were of the Bederwood and the Warfield. The plants of the Dunlaps, owing to the rich quality of the soil and the manures that had been applied, showed a very rank growth, the beds being so thickly set with plants that we could not expect to get fruit in the shape that they were in. On account of scarcity of help we concluded that it was necessary to do something different from hoeing and cutting these out, so in reading over a book that was published by Mr. Perry of Ohio, we found that in the Southern Wisconsin, I think, is a man by the name of Smith, living in

Green Bay at that time whom Mr. Perry visited during the same season; he found that Mr. Smith had a great share of his crop of strawberries entirely covered with mulch, not only between the rows as has been stated and as is the usual custom, but all of the plants entirely covered and thickly covered. From the way that these plants survived and looked in the spring of the year, we concluded that it might perhaps add to the vitality of some of these new varieties, for instance, the Dunlap, they showed a great deal stronger growth after this treatment. We went to work and followed the directions that Mr. Perry gave in his book, first covering with pea straw, partially, while the other part is covered with hay and straw such as we have, wheat or rye straw. In addition to this, we covered the entire surface with barnyard manure, so that every plant that was growing on that soil was out of sight and remained out of sight. This was done for the purpose of smothering, to a large extent, this part of the bed where the ground had become so thickly set with plants. The result of it was that late in the spring a few of these plants began to show, not many, but in digging under and in handling the plants under the mulch we found a great number of the plants were alive, perhaps even more than we wanted and further on the berries in consequence of this were much later in ripening, but we found that with the work that we had done and the manure that we had applied that that was one way of growing plants in a bed where the plants are so thickly set and where you do not want to put in any work. While it does not affect the plants to the extent of killing them outright, with the exception of some of these plants that were planted next to the Dunlaps, the Bederwood and the Warfield, a good share of them had actually killed out in large patches, while right along the row of the Dunlaps were plants sufficient to produce a crop such as we had never raised before. That was in the winter of 1905-6.

WEDNESDAY AFTERNOON SESSION.

THE COST OF PRODUCTION IN FRUIT GROWING.

PROF. S. W. FLETCHER, Agricultural College, Mich.

The rapid development of commercial fruit growing is one of the most notable features of American agriculture. Previous to 1860 there were very few commercial orchards, fruits were

grown almost wholly for home use, and not for market. With the growth of cities, and the corresponding increase in the demand for large quantities of fresh fruit, some men found it profitable to abandon general farming and to give more attention to the orchards and small fruit garden, which had hitherto been greatly neglected. From these small beginnings of about fifty years ago the great fruit interests of the present time have developed, and especially during the past twenty-five years.

The 12th census reports that on 1.4 per cent. or 86,094 of the 6,149,584 farms in the United States fruit growing is the leading industry. These farms included 6,064,877 acres of fruit plants which produced, in 1899, 212,366,646 bushels of fruits, worth \$83,751,840. In value of the product fruit growing was eighth, the crop of corn being worth \$828,000,000; hay and forage, \$484,000,000; wheat, \$369,000,000; cotton, \$323,000,000; oats, \$217,000,000; vegetables, \$113,000,000; forest products, \$109,000,000; potatoes, \$98,000,000; fruit, \$83,000,000. According to the same report, there were \$404,000,000 invested in fruit farms, as compared with \$5,493,000,000 invested in hay and grain farms and \$5,691,000,000 in the live stock industry.

These figures reflect the rapidly increasing commercial importance of the fruit industry, but it must be remembered that they are the conditions existing during the last census year, 1899. Unquestionably the next census will show that 25 per cent. and more has been added to the amount of capital invested in fruit growing, and that fruit precedes potatoes and forest products, at least, in commercial importance. I wish to emphasize the point that the fruit growing business is expanding more rapidly than most other lines of crop husbandry. There is every probability that this expansion will continue, for fruit is becoming more generally considered a staple article of diet, and not a luxury, as formerly.

The rapidly increasing production of fruit has set in motion certain economic forces which the fruit growers of today may well consider. As the area in fruit becomes larger, competition becomes stronger and the prices received for fruit are correspondingly lower. The larger demand for fruit, due to the increase in population and the more common use of fruit as a staple article of diet, have not, in most cases, fully offset the increasing competition. In general, the prices received for fruit are lower now than they were fifteen years ago; that they will go lower still we have no doubt. There are many exceptions to this general rule, for the prices received for fruit depend upon economic conditions which are ever fluctuating, but, taken as a

whole, the prices that the fruit grower receives for his products are lower now than they used to be and probably they will continue to go lower.

To illustrate the fact that prices received for fruit are tending lower because of increasing competition, and also that this general tendency is continually upset somewhat by fluctuations in the relation between the supply and the demand for fruit, I quote the following market reports on Baldwin apple, Bartlett pear, Concord grape and Fancy quince. These quotations were taken from the files of the Rural New Yorker from 1880 to 1905 and are for the general market of New York City. The market quotations taken were for the week nearest the middle of each month. The price given for the year was secured by averaging the prices quoted for the several months. In all cases the quotations are for fancy fruit. In a few months no quotations were given; and when there was any doubt about the quantity or quality of fruit mentioned, it was not included. While this method of getting at the average price received for fruit in different years is open to criticism, it is, perhaps, as fair a comparison as can be made.

The quotations show that the price for Concord grapes and Bartlett pears have declined most noticeably, that the price received for quinces have declined but little, and that the price received for Baldwin apples have fluctuated least of all. The average price received for Baldwin apples from 1880 to 1895 was \$2.77 as compared with \$2.80, the average from 1895 to 1905; for Bartlett pears, \$6.56 as compared with \$4.04; for Concord grapes, 4c as compared with 2½c; for fancy quinces, \$4.61 as compared with \$3.78

Although the prices received for fruit fluctuate widely from year to year, owing to many varying factors in the supply of fruit and the demand for it, yet there is a general tendency toward lower prices, just as there is in every other commodity the supply of which has increased very rapidly.

The fruit grower of today need not view this descending scale of prices with alarm. Reduced prices have been met, and probably will continue to be met for some time to come, by a lower cost of production, so that the profits may still be as large as in earlier years, though the prices received are smaller. But it is evident that the fruit grower must look forward to the time—if, indeed, it is not already here in some sections—when fruit growing will be profitable only to the man who can put superior fruit on the market at a very low cost of production. This means congenial climate, favorable soil, varieties that are perfectly adapted to the climatic and soil conditions and to the

demands of the market, and skill in all the details of culture and marketing. The owners of New England cotton mills are being forced to move them to the south, where the raw material and labor are cheaper, so that they can manufacture cotton goods at less expense. In every trade and industry the man who can produce the goods a trifle cheaper than his competitors has a tremendous advantage over them. So it is in fruit growing.

There are, of course, other things to be considered besides the ability to produce fruit cheaply, nearness to a good market, for example, may be worth more to the grower than a low cost of production. But it is undeniable that there is increasing necessity for the fruit grower to figure on the cost of production as accurately as he can, and to reduce it to the lowest point consistent with market returns. It is not possible for him to estimate the cost of producing his articles with anything like the accuracy of the manufacturer. The raw materials of the fruit grower are sunlight, air, water, soil; these are manufactured into fruit, but under such varying conditions that it is impossible to assign values and predict results accurately. But a fairly reliable estimate can be made, and I urge the necessity for such a calculation in view of the increasing competition in the fruit business.

COST OF LAND.

The main items which enter into the cost of production in fruit growing are land, capital, goods and labor. When the fruit grower buys land, he is really buying its fertility, or its power to produce crops. He is buying nitrogen, potash and other plant foods, soil, water, soil texture, the heat and light shed upon that soil by the sun. He is buying, not mere dirt, but all the energies and forces above the soil, as well as in it, that are needed to transform or manufacture plant food into apples, peaches, strawberries. The value of different soils as fruit factors varies greatly; the fruit grower learns that this often depends fully as much upon their texture as upon their chemical composition. He learns, moreover, that while man can do much to improve poor soils, and so increase their productivity—by tillage, green-manuring, irrigation, etc.—yet Nature does more to provide a soil with desirable qualities than man can ever do. It is for his interest to get land that already has a large productive capacity, if it can be procured. The need of under drains, for instance, may increase the cost of producing fruit several cents a bushel. There is much fruit planted on land that is so poor or so poorly drained that it has not the power to produce fruit economically.

The amount of capital that the fruit grower invests in land is large. The average size of the fruit farms of the United States is 74.8 acres as against 159.3 acres for hay and grain farms and 226.9 acres for live stock farms. But the average fruit farm is worth \$71.55 per acre, while the average hay and grain farm is worth \$30.34 per acre and the average stock farm, but \$21.14 per acre, so that the value of the average fruit farm is \$5,374, the hay and grain farm \$4,834 and the stock farm \$4,797. The census shows that 72.4 of the value of the average fruit farm is land, and this constitutes 72.3 of the value of the hay and grain farm, and 59.9 of the value of the stock farm. So it appears that the fruit grower usually has as large an investment in land as other husbandmen, and larger than many. The more perishable the fruits he grows the more imperative is it that land be secured near his market. This usually means that the land will be worth more and so the cost of production be increased that much. But the advantages of being close to a market may, and usually do, more than offset this loss, in the case of perishable fruits like strawberries, raspberries and plums. On the other hand, if the fruit can be grown just as well at a distance from the market, and is not quickly perishable, as winter pears or apples, it is manifestly a saving in cost of production. This, likewise, may be more than offset by the increased cost of getting the fruit to market. In figuring the cost of production the capital invested in land should be charged due interest.

COST OF CAPITAL GOODS.

Under this general heading are included such items as machinery, implements, buildings, farm animals, fertilizer, spraying materials, cash capital, and other things that are needed in growing and handling the crop. Here again the fruit grower has a heavy investment.

A machine or implement that does work formerly performed by hand, and does it cheaper, lowers the cost of production. Some machines and tools do better work than others; one spraying outfit may spray a tree just as well as another and a fraction of a cent cheaper. The fruit grower who uses the most improved cultivators, sprayers, pruning tools, so that the work is done cheapest, produces his fruit for the least money and, to that extent, has an advantage over his neighbor who uses tools poorly adapted for the work. High priced tools are not expensive if they do the work easier and cheaper. One should not begrudge the price of a new tool, if it will do the work in less time or with greater thoroughness.

The fruit grower is a specialist in agriculture; hence he requires more tools than the general farmer. The value of the implements and machinery on the average farm of 74 acres, is \$175, or \$2.34 per acre; on the average hay and grain farm of 159 acres \$166, or \$1.04 per acre; on the average live stock farm of 227 acres, \$151, or \$.66 per acre. The amount of capital invested in implements on all American farms is \$760,000,000, or an average of \$.90 per acre, which is an increase of nearly 80 per cent. since 1850; thus the fruit farm has $2\frac{1}{2}$ times as much capital invested in implements as the average farm.

The point of view of the fruit grower regarding the amount of capital that he can afford to invest in implements should be this: he cannot afford not to have an implement that will enable him to produce fruit cheaper. The investigations of the Labor Bureau have led to the conclusion that in the last 20 years, by the aid of machinery and the substitution of horse, steam and other power for hand labor, the effectiveness of human labor on farms has been increased one-third. The cost of producing a bushel of choice fruit is certainly lower than it was 15 years ago. Has the fruit grower estimated how much the use of a power sprayer decreases the cost of protecting fruits from pests, as compared with a hand sprayer? He is perhaps not as dependent upon implements as the grain and hay farmer, but he should be watchful for every new labor-saving device that will cheapen the cost of raising fruit.

The amount of capital invested in buildings, machinery and livestock on the average fruit farm is 27.6 per cent. of the total investment, as compared with 27.7 per cent. on hay and grain farms and 40.1 per cent. on stock farms. The investment in fertilizers is usually much higher, being at the rate of 30 cents per acre for all the fruit farms of the country, while hay and grain farms invest four cents per acre and stock farms but two cents. There is, of course, much variation on this point. Most of the fertilizing for fruit is done east of the Mississippi; a very large proportion of the western fruit farms have never been fertilized. In addition to these items of required capital a certain amount of cash must be kept on hand to run the farm. This usually varies from \$4 to \$30 or more per acre according to the valuation of the land and the intensity of culture.

COST OF LABOR.

The labor problem enters into the fruit grower's budget of expense quite heavily, especially if he grows small fruits. Ac-

gording to the twelfth census there is but one hired farm hand to every three farms. This shows that most of the work on the average farm is done by the farmer and his family. On the fruit farm hired labor is often necessary, especially at certain seasons, and most especially at harvesting. Although the average fruit farm is only one-half as large as the average hay and grain farm, it requires more labor, largely because it is cultivated more intensely. One of the increasing difficulties in fruit growing, as in other lines of farming, is to get sufficient reliable help. The man who grows perishable fruits is most concerned about this phase of the business. Some fruit growers meet the situation very satisfactorily by raising large families, but this solution is denied to some.

The man who is locating a fruit industry should consider very carefully where he can get labor and what it will cost. There is much difference in localities in this respect. In general, the nearer to a city or town the fruit farm is located the more easily the labor problem is solved. This advantage may help to offset higher valuation of land. Human labor is the most expensive item that enters into the cost of producing a bushel of fruit. The effort should be made to reduce the amount of hand labor that is needed by using improved machinery and tools. In some cases it is desirable to grow other crops besides fruit, so that the labor needed for fruit may be kept employed throughout the year, as is discussed further on.

FRUIT ZONES.

Besides these three primary factors in the cost of producing fruit—land, capital goods and labor—several other points bear a very important relation to the problem. The adaptability of the fruit or variety to the location, the site and the soil in which it is grown, has more influence than all the other points that have been mentioned. The fruit grower must remember, first of all, that there are fruit zones, or regions that are particularly adapted, by climate, topography and soil, for the culture of a certain fruit. Thus we have the grape belt of Chatauqua County, New York; the peach belt of western Michigan; the apple region of the Hood River Valley, Oregon; and so on. The limits of these general fruit zones are now pretty clearly defined, although every year small areas formerly considered uncongenial for a certain fruit are being found favorable for it. In most every locality a number of fruits can be grown; but the fruits that can be grown the best, and therefore the cheapest, may be but one or two kinds. Fruit growing is

bound to become more and more segregated, for increasing competition will make it impracticable to grow a staple fruit except in the locality and on the soil where it thrives best, and so can be grown cheapest. The demands of a near-by market, however, will offset this to some extent. In locating a fruit farm this point should be kept in mind, although market conditions, cost of land and other factors may sometimes make it expedient to grow a fruit outside its most congenial clime.

What is true of fruits as a whole is true also of varieties. Certain varieties thrive best in certain localities or on certain soils. It costs less to raise a bushel of fruit if the variety is happy in its environment than if it is not. This one point may have more to do with the cost of production than all others. The man who tries to raise Baldwins in a locality where a tree as hardy as Wealthy is needed, is sure to fail; the man who tries to raise Warfield strawberries on heavy land, better adapted for Parker Earle, must expect the cost of producing his berries to be a little larger than if he had fitted the variety to the soil more skillfully. The varieties that succeed best can usually be grown the cheapest, and usually, but not always, they will pay the best. In his effort to produce fruit as cheaply as possible, the fruit grower will naturally turn to the varieties that reach the greatest perfection on his farm, provided they are satisfactory in other respects.

COST OF FIGHTING INSECTS AND DISEASES.

The expense of fighting insects and diseases is a large item in the cost of producing fruit, and this expense varies widely in different sections. There are irrigated valleys in the west where it costs 50 cents per tree a year to protect apples from codlin moth; and there are other areas where apples can be protected from the same pest for 10 cents per tree, or less. Likewise it costs 30 cents per year to protect a peach tree from San Jose scale in some sections and nothing in other sections. Fire blight may ruin half the pear trees in one locality; another may be exempt. So one of the important points for a prospective fruit grower to look after, is the probable cost of fighting pests and diseases and the probable unavoidable loss because of them. He may find that one locality offers great advantages over another in this respect. This point is of large and growing importance in estimating the cost of producing fruit.

SINGLE-CROP OR DIVERSIFIED FARMING.

The cost of producing fruit will be influenced to a large extent by the kind of farming, whether only fruit is grown or mainly, with other crops or stock as a side issue. Seventy-five years ago, when most of the population lived in the country, the aim of the farmer was to produce all the articles that were needed to supply the needs of the family. He grew small quantities of nearly all the crops that would thrive on his farm. Now the farmer grows crops for market, not for his household. The growth of cities and increasing competition have made it necessary for the majority of farmers to specialize along some line and to grow only the crops or raise the stock that succeed best on their farms, and to purchase those necessities that they can buy cheaper than they can raise. Agriculture is becoming more and more specialized.

The business of fruit growing is one of the most specialized lines of agriculture. It is usually conducted on small farms under intensive culture, and but a few kinds of fruit plants are grown. Many fruit growers have no other business. There are economic advantages in this arrangement, but there are great disadvantages also. In many cases fruit could be produced cheaper if a certain amount of other crops were grown, or stock kept. It is all right for the manufacturer to produce but one article, for he can work at it all the year. The crop of the fruit grower, however, occupies his attention but a part of the year. There is much loss in unused capital, labor, teams, tools and other capital goods, during the remainder of the year.

I believe that there is a tendency to specialize too highly in fruit growing and that in many cases it would be more profitable for the fruit specialist to grow a certain amount of other crops, or keep a certain amount of live stock. He should, of course, make fruit growing his main business, and select such other interests as will most effectively fill in the gaps that appear in all kinds of specialized farming. Even though the crops he selects may not be nearly as profitable, in themselves, as fruit, yet the total profit from the farm for a series of years may be greater, since labor and the capital goods are kept in use. In short, the fruit grower should endeavor to have supplementary work which will not compete with the fruit crop; that is, which will not need a large amount of attention at the time that the fruit crop demands care. Certain lines of stock husbandry in which the animals are fed in winter and pastured in summer are practicable in some cases. Remember also the value of the

manure. Dairying, of course, would come in competition with the fruit crop in summer. In most cases some line of farm work can be found which will not encroach seriously upon the fruit crop, and which will make use of the capital goods and labor of the farm that otherwise would be idle. To that extent it will cheapen the cost of producing fruit.

Added to the cost of producing the fruit is the cost of placing it on the market. Here, also, are many points that make for profit or loss. The cost of harvesting and packing, the cost of packages, the distance of the orchard from the railroad or shipping point, the character of the roads between the orchard and the shipping point, the cost of transportation and commission—these and other points should be figured on. Every mile that an orchard is distant from a shipping point adds to the price at which the grower can put that fruit on the market at a profit. The cost of placing fruit on the market is as fluctuating as the cost of producing it. It is not within the province of this article to consider this point in detail.

ESTIMATES ON THE COST OF PRODUCTION.

The foregoing paragraphs have emphasized the fact that the cost of producing fruit is extremely variable, depending upon many factors, most of which the fruit grower can control. Any estimate must be personal estimate—how much it costs a certain man in a certain locality; and this estimate may be wide of the general average. Merely to show what it costs some men to produce fruit, I quote from some letters received the past month. The figures given include both the cost of growing the fruit and the cost of picking, packages and packing, but not the cost of marketing it. The estimates are for first grade fruit.

Apples—T. A. Farrand, Eaton Rapids, Mich., 25 cents a bushel; W. M. Pratt, Benton Harbor, Mich., 28 cents; Benton Gebhardt, Hart, Mich., 25 cents; T. C. Wilson, Hanibal, Mo., 30 cents; L. A. Goodman, Kansas City, Mo., 20 cents.

Pears—T. A. Farrand, 34 cents a bushel; W. M. Pratt, 30 cents; L. A. Goodman, 80 cents.

Cherries—T. A. Farrand, \$1.00 per bushel; Benton Gebhardt, 75 cents; W. M. Pratt, \$1.30; L. A. Goodman, 70 cents.

Plums—T. A. Farrand, 50 cents per bushel; Benton Gebhardt, 50 cents; L. A. Goodman, 50 cents.

Peaches—T. A. Farrand, 43 cents per bushel; Benton Gebhardt, 45 to 60 cents; W. M. Pratt, 40 cents; L. A. Goodman, 40 cents; T. C. Wilson, 30 cents.

Grapes—W. M. Pratt, 4-5 cents per pound; L. A. Goodman, 1 cent; N. G. Blalock, Walla Walla, Wash., 2 cents.

Strawberries—W. M. Pratt, \$1.20 per bushel; L. A. Goodman, 64 cents; T. C. Wilson, \$1.25; N. G. Blalock, \$1.20; C. B. Cook, Owasso, Mich., \$1.73.

Black Raspberries—W. M. Pratt, \$1.10 per bushel.

THE PROFITS IN FRUIT GROWING.

The profits in fruit growing depend upon the cost of production, the cost of marketing and market conditions. There is more variation in the income from fruits than from most other common farm crops. The average income, however, is higher than the income from other common lines of husbandry. The last census shows that the average incomes in different lines of farming are: sugar, \$5,317 per farm; nurseries, \$4,971; florists' establishments, \$2,991; rice, \$1,335; fruit \$915; live stock, \$788; dairy, \$787; cotton, \$430. But the gross income means nothing; it is the per cent received on the capital invested that counts. The average fruit farm of 74 acres returns \$760 worth of products; the average hay and grain farm of 159 acres, \$915; the average stock farm of 226 acres, \$788. Census statistics show that the average fruit farms return 9.6 per cent of interest on the investment. Very much larger returns than this are common—I know one man who, in a series of 14 years, has averaged 35 per cent yearly from his investment in an apple orchard. On the whole, the returns in fruit growing are apt to be larger than the returns in general farming, provided the same degree of intelligence, energy and capital is invested in each case. The fact that 83 per cent of the fruit farms of the country are owned by the men who work them, as compared with 48 per cent of hay and grain farms and 68 per cent of dairy farms, is further evidence that the fruit growers of the country are making their business pay. The census says: "Fruit farms have a value above the average, and a higher per cent of them are owned than of farms of any other class."

I have purposely left till last the most important item in the cost of producing fruit. This is the personality and the skill of the man. This counts more than all else; for the right sort of a man can over-ride obstacles, avoid mistakes and make fruit plants respond where a less skillful or less energetic man would fail. The fruit grower is so closely dependent upon physical conditions, which are unstable, and upon social and market conditions, which change from year to year, that it is not possible

for him to do his work by rules or estimate his expenses with the mathematical exactness of the manufacturer or merchant. It is constantly necessary for him to adjust himself to new commercial and physical conditions. There is, of course, an element of chance in the business, but this is very small as compared with the almost unfailing regularity with which success follows energy, skill and judgment.

Prosperity is determined most of all by efficiency. Most of the factors that enter into the cost of producing fruit are within the powers of the grower to modify. Good judgment in selecting a location may reduce the cost of raising fruit more than skill in growing the crop. While this subject can never be reduced to mathematical exactness, yet a fairly reliable estimate can be made and it is the part of a business fruit grower to figure out an approximate estimate. It may show that he is producing certain fruits or certain varieties at a loss and help him to weed these out, as a dairyman weeds out unprofitable cows with the aid of the scales and the Babcock test.

DISCUSSION.

Mr. G. J. Kellogg: The figures and representations of the fruits given by Professor Fletcher are from large commercial orchards from Missouri and Michigan. When we get right down to the cost of fruit raised here I should put the Duchess apple at ten cents a bushel, on a common farm; we have not commercial orchards to reduce the cost of the fruit industry. His report of strawberries agrees fairly well with our own, from two to four cents a quart; he gives it by the bushel, same price, but I have been trying to raise pears for fifty years. I used to say they cost \$10 apiece, I got down to five after a while, while now I can raise them for five cents a piece. It depends on the locality and somewhat the man and somewhat the loss and experience for a number of years. It is the locality that makes the difference. I think it is a matter of guesswork when you come to figure the cost of fruit to the farmer. It is not the dollars and cents, it is the health for his family, they pay, no matter what they cost, they pay.

Prof. Hansen: I would like to ask Prof. Fletcher as to the prospects of planting more summer and fall apples for cold storage instead of planting winter apples that are not as hardy in the far north.

Prof. Fletcher: I am not familiar enough with conditions in the far north to give any positive opinion of value on that, but my general opinion would be that the prospects are good.

I believe that the winter apple business has been slightly overdone; in Michigan at least I know many growers who are now putting out fall and summer apples and have made them a wonderful success, much more so than the winter sorts. I wish somebody who lives farther north than I do would answer that.

President Coe: Perhaps you can answer your own question, Prof. Hansen.

Prof. Hansen: I wanted to get some light on the subject myself. I will say, though, that for a large part of the north-west, farther north and west than here a good ways, it seems to me that the fruit market is in the possession of the banana and orange people and we do not see enough of these early apples. We really have to wait for the eastern apples; the summer and fall apple business is not overdone, in fact, we get hungry for early apples and it seems to be a question of transportation rather than anything else.

Mr. Howard: I have been experimenting a little, but I think it would pay to raise more of the fall and winter apples and hold them in cold storage. I think there are many more that will agree with me, because we have cold storage now in the cities that will hold them almost perfect; I see no reason why we have to ship in and pay the freight when we can raise them so near the market and supply the market without having to ship so far.

Mr. Philips: What success did you have in keeping them in your cold storage cellar?

Mr. Howard: It keeps them perfect; I did not put up any ice a year ago, but I put up ice two years ago and it kept them until June. I kept Duchess until February perfectly sound.

Mr. Philips: Had not they lost some of their quality?

Mr. Howard: Yes, they had lost their quality and flavor, but the apples were sound, without any blemish.

Mr. Philips: How long did you keep the Wealthy so that they were really good?

Mr. Howard: All winter long, they were as crisp as could be.

Mr. Kellogg: What does it cost you for storage?

Mr. Howard: The Duchess cost me about five cents a bushel.

Mr. Philips: What does the Wealthy cost?

Mr. Howard: It does not cost me to exceed ten cents a bushel; I don't know but I am a little more favored in location than most of you, but it does not cost to exceed that with me.

The President: What is the capacity of your cold storage?

Mr. Howard: About one thousand barrels.

The Secretary: I want to ask if in the opinion of the members conditions in Wisconsin are not more favorable to growing fall and summer apples than farther east, south or southwest? It has been my opinion for some time that we can raise better Duchess and Transparent and summer apples in Wisconsin than they can in other parts of the country. Now, honestly, I fail to see the point in raising Duchess apples and in keeping them until January and February. It seems to me what the people of Wisconsin should do today is to raise Duchess apples and put them on the market, supply the great markets of the northwest, like Minneapolis, St. Paul and Chicago. I have maintained for years that this is a line of apple growing in which Wisconsin can excel. We can supply the entire northwest with summer apples, putting them on the market in the season of summer apples. When we keep a Duchess apple until February we place it in competition with the Northern Spy and other apples that are a better quality. I firmly maintain that it is up to the fruit growers of Wisconsin to raise summer apples and let the winter apples be grown largely by the people in the Ozark region and Virginia and New York and other great apple regions. Just the same in all other products. Certain regions of the country are adapted to certain products and I believe Wisconsin is adapted to growing summer apples, and I believe we can plant thousands and thousands of acres of Duchess and Transparent and put them on the market to great advantage. I think it is merely a question of transportation and marketing, there is no question of over-production. You can easily overstock your local market with a few barrels of apples, but when we solve the question of distribution it will be entirely different.

Mr. Howard: If you raise Duchess apples on a large scale you certainly will have to hold them. If you ship them to the cities, the first thing you know it will be overdone and you will not get anything. I have held my Duchess at home until the Duchess were gone and I got \$3.50 a barrel for them in the city when the main crop was cleared up, but if I had put them on the market when they were ready to ship I would not have got the freight out of them.

Mr. Toole: In regard to what Mr. Howard has said about keeping the Wealthy, we do not need to confine ourselves to the Wealthy; there is the Plumb Cider and others that we have, quite a variety of them and I will say that the Wealthy when kept in the condition that we know it can be kept, is a far better apple than any of the eastern varieties that come into the Bara-

boo market, and if we can place the Wealthy that are grown in Sauk county on the Baraboo market, there would be but very little call for the Baldwin and other apples of poorer quality which come from New York.

Prof. Hansen: I simply asked the question to start the discussion. That is exactly what I wanted to get hold of. A year ago last summer I had the pleasure of seeing thousands of acres of apple orchards down in Arkansas and Missouri; they were all winter apples and the question came to my mind, where shall we get our apples before the winter apples come in? The question of distribution has not been solved by any manner of means in the northwest. If the early apple men were as well organized as the banana and orange men, they would not leave these immense market to these people; you would have your nice juicy Duchess and Wealthy apples in their place. I think Prof. Cranefield has hit the nail on the head when he said that if you at the north here can raise these earlier apples, the Duchess and especially the Wealthy and can put them into the market you can get ahead of the southern people, but you must hold them for a time, be able to solve the question of cold storage and the question of distribution, as Mr. Howard has suggested, and there is an immense field. It has occurred to me in traveling about the country that there is a lack of apples in the proper place. You sell apples at twenty cents a bushel, Duchess apples rot on the ground, when there is a whole empire northwest of here that should have them.

Dr. Loope: I want to chip in and inquire what basis you are arguing upon? Are you arguing for the farmer and for the home, or are you arguing in a commercial sense? There is a vast difference between the two. The farmer has no cold storage to put his apples in, but if he is near to a cold storage plant, he can keep his summer or fall apples, he can keep them so as to provide himself with apples all through the winter and into the spring, all through the year, if necessary. One has to discriminate a little too in regard to the varieties that one uses for cold storage. McMahan's White cannot be kept in cold storage successfully beyond December, I put it as a broad proposition that you cannot do it. You may have some good McMahan's White in cold storage after December, some that will keep well, but you can keep them as long as that in your cellar, pretty nearly, and if you keep them in cold storage, they are going to scald and are not going to be good for anything, they are going to deteriorate. The question of the Duchess being in cold storage any length of time does not appeal to me at all, because when they are kept in cold storage for six weeks they are not

good for anything. The farmer has to have some plan whereby he can keep apples in his own way, he cannot get cold storage, so that you are up against a proposition there very soon in the question of the fall apple and the capability of Wisconsin growing any amount of Duchess apples, and if you have the Wealthy and a few of the fall apples and can put them in cold storage, you can have apples, otherwise you cannot. If you pick the Wealthys and the Longfields after they are fully ripe, they will keep well for a while. I noticed some of both of these on the tables and I will say that I never saw a finer lot of Longfields at this time of the year except a few that are kept in a cellar where one has to sort them over and keep out the rotten ones. It is possible to keep them if you let them get fully ripe and there is no question but what we can keep the Wealthy until March 1st, but without cold storage you are not sure of keeping them longer. There is no question, as Prof. Cranefield has said, of the amount of apples that can be raised in Wisconsin, but our friend from Minnesota has said that in order to sell a Duchess, you have got to sell it when it first comes on the market, or to hold it a little longer, but in my opinion you must not hold it very long, otherwise it loses all its quality. That has been my experience. I have tried cold storage to some extent. But Wisconsin can raise summer and fall apples, I emphasize the fall, because they are better. You do not want anything better than a commercial orchard of fall apples of the right kind and if you have cold storage you can keep them later. I would like to ask Mr. Howard in regard to his cold storage and what it cost him?

Mr. Howard: I do not know that I can give you the exact cost, because I did so much of the work myself, the timbers were sawed out of the woods, but the system is the Bowen system of St. Paul and the system is perfect. That of course I had to pay for, I think I gave \$190 for putting the system in and they did the inside work in putting it in.

The Secretary: I beg your indulgence just a moment more to emphasize what Prof. Hansen said. There are people who want apples and cannot get apples, and in reply to the question of Dr. Loope as to whom we are speaking for, the farmer or commercial orchard man, I say, the commercial orchard. It is our duty to develop commercial orcharding in Wisconsin, I think it is high time, and I beg leave to insist that we can easily grow and dispose of more summer and fall apples than we are now growing. I venture to say that there are at least eight million people within twenty-four hours of any point in the state of Wisconsin by rail, residents of cities, that want apples

and cannot get apples. There is Chicago and other cities are available; if we had Dutchess apples to pick to deliver to them a few hours after they are picked, I am sure they would use them. It is all a question of distribution. Dutchess apples are not more perishable than strawberries and we distribute our strawberries and put them in the hands of the consumer within twenty-four hours, or else they are lost. When we have solved this question of distribution, we have solved the problem and we can eliminate cold storage.

THE M'INTOSH APPLE.

- (1) Its History.
- (2) Distribution in Wisconsin.

R. J. COE.

Secretary Cranefield has ideas of his own and one of them is that instead of trying to discuss all the known varieties of apples at any one meeting of this society we shall take up just one and find out all we can about that one variety and then let it rest. This year it is the McIntosh. I give its history as found in Prof. Beach's great book "The Apples of New York."

"This variety belongs to the Fameuse group. It is adapted to a wider range of localities than is the Fameuse. The fruit is very attractive in appearance, of bright deep red color and good size. The flesh is very tender, perfumed and delicious. It is desirable for local markets and special trade but because of its lack of firmness it is less suitable for general handling. As grown at this Station it begins to ripen in late September or early October. In western New York it cannot be expected to keep much later than October in ordinary storage without considerable loss but in cold storage it may be had until December or January. When grown in more northern or elevated regions it is often held in good condition till midwinter or later. It is susceptible to scab but this may be readily controlled with proper treatment. The crop ripens unevenly and a considerable portion of the fruit is liable to drop before it is ready to pick. On this account it is best to make two or three pickings. In some localities the tree is said to be a somewhat slow grower and not satisfactorily productive, but more often it is found to be a rather strong grower, hardy and healthy. It comes into

bearing rather young and is a reliable cropper yielding good crops biennially and sometimes annually. It has not been sufficiently tested to demonstrate fully its value for commercial purposes but it is regarded by many as one of the most promising varieties of its class for general cultivation in New York.

Historical. Originated as a chance seedling on the McIntosh homestead, Matilda township, Dundas county, Ontario, where Allen McIntosh began the propagation of this variety in the nursery about 1870. It has been widely disseminated. It is now commonly propagated by nurserymen and its cultivation is on the increase in New York.

TREE.

Tree vigorous with numerous, small, slender laterals. Form rounding or spreading. Twigs above medium to short, straight or nearly so, rather slender; internodes long to below medium. Bark bright reddish-brown, lightly streaked with scarf-skin; slightly pubescent. Lenticles quite numerous, small, oval or elongated, raised. Buds deeply set in bark, medium to below, plump, obtuse to acute, free, slightly pubescent.

FRUIT.

Fruit above medium, sometimes large, pretty uniform in shape and size. Form roundish to somewhat oblate, regular or faintly ribbed, obscurely angular. Stem short, stout or moderately slender, usually not exerted, often with regular protuberances. Cavity large, acuminate or somewhat acute. Calyx small, closed or partly open; lobes short to long, narrow acute. Basin pubescent, rather small, medium in depth, narrow, abrupt, smooth or obscurely furrowed.

Skin thin, moderately tender, smooth, readily separating from the flesh, clear whitish-yellow or greenish washed and deeply blushed with bright red and striped with carmine; highly colored specimens become dark, almost purplish-red with the carmine stripes obscure or obliterated, overspread with thin, lilac bloom. Often the effect of the deep red is heightened by lively contrast with one or more spots of the clear pale yellow ground color where some twig or leaf pressed closely against the growing fruit. Dots whitish or yellow, usually very small.

Calyx tube short, conical or funnel-shape with broad limb. Stamens medium to basal.

Core medium size, usually abaxile; cells usually wide open;

core lines nearly meeting. Carpels roundish to elliptical, narrowing toward base and apex; smooth, much concave. Seeds medium brown, rather large, acute.

Flesh white or slightly tinged with yellow, sometimes veined with red, firm, fine, crisp, tender, very juicy, characteristically and agreeably aromatic, perfumed, sprightly, subacid, becoming mild and nearly sweet when very ripe, very good to best for desert.

Season October to December or later."

I had hoped to have some of the apples here at this meeting and wrote to Mr. John Reis of Ithaca who, I thought, would be likely to have some on hand, and in his reply he said "I am sorry to say that I cannot furnish any of the McIntosh apples for the winter meeting but the fact is that they go very fast with us. It is the best flavored apple there is. We have nothing to compare with it."

DISTRIBUTION IN WISCONSIN.

I cannot say how generally this apple has been planted but think not to any great extent. Am hoping the discussion will bring out some knowledge along this line.

THE MCINTOSH RED.

- (1) Its Place in Wisconsin Orchards.
- (2) Is it better than the Fameuse?

B. E. BINGHAM.

I must confess to a limited amount of observation and experience with the subject of this paper and were it not for the fact that the majority of my hearers are similarly placed I should hesitate about offering any opinions on the subject whatever. As it is I shall give you briefly the ideas I have formed from my limited (knowledge) observation, trusting that the discussion will bring out the truth or error of my opinions for it is the truth we are seeking in all our work. Truth means success. Errors lead to failure.

I presume that you are all more or less familiar with the McIntosh Red. I mean the apple itself. In size it is about the

same as the Fameuse. In coloring it is better. The quality of the fruit itself is very similar to that of the Fameuse. Its season is considerably earlier.

So much for the apple itself. Now the wording of this subject presupposes a claim of the McInotsh apple to a place in Wisconsin orchards. Now just what that place is to be time alone can tell, but if it is a good thing and is destined to take rank with the few good varieties of apples suited to our soils and climate, a thorough discussion of its qualities, good and bad, will most quickly establish it in its proper place. To consider this question fairly we must do it with reference first, to the object for which it is grown; second, the grower; third, the location.

Without attempting to discuss these points separately I shall try to show what bearing these things have on the question.

There are two classes of growers to be considered and with them we can also discuss the object for which they are growing apples. First, those who grow apples for market and those who plant only small orchards, chiefly for home supply of fruit, and sell only what is grown in surplus in the years of good crops. This class of growers simply plant and cultivate or do not cultivate, as the case may be. They do not consider the business of enough importance to prepare themselves to fight insect pests and fungi as does the commercial grower. In spite of all that is written and published in farm journals, fruit papers and in fact in the weekly country papers, there seems to me to be a woeful lack of comprehension of the simple yet vital points in regard to spraying fruit trees to combat these foes. To those of us who have had experience along this line there seems to be nothing difficult to the task except the eternal watchfulness and the work, for it is work, work, work. An incident will illustrate the point. One day I chanced into a drug store just as a neighbor farmer had asked for a quantity of borax. "That is what I want, ain't it?" said he turning to me. "What do you want it for?" I asked. "To spray my fruit trees," he replied. On inquiry I learned that he had read of Bordeaux mixture but thought there was some mistake in print and borax was meant.

To others the matter is wholly unintelligible and as difficult and mysterious to them as a doctor's prescription and, therefore, after planting the trees let nature do what she will for them and take the result; then say it doesn't pay to raise apples, even for home use, can buy them cheaper. So what we ought to do is to get a list of those apples that will do the best for the farmer with least amount of spraying and attention or

with none at all, until he has learned how to attend to them better. In the meantime we must simplify and disseminate the knowledge of scientific fruit culture until all shall be able to appreciate the simplicity of it and apply it and note the wonderful advantages gained by its use.

Should such a grower ask me the question, Is the McIntosh better than the Fameuse? I should say: do you fertilize and cultivate your trees? If you do, yes. If you do not, no. For while the Fameuse apple does better under adverse conditions, it is prone to scab. The McIntosh if left to grow in sod will always show its neglected condition. It will not scab like the Fameuse.

Only this fall I saw hundreds of bushels of Fameuse apples practically worthless for market that had the trees been sprayed thoroughly with Bordeaux mixture at the right time, would have been worth 40 cents a bushel at the orchard instead of being worth less than the picking. Nor is this all. A variety as subject to scab as the Fameuse, if planted by the average farmer who makes no attempt to fight the fungus, will result not only in a very poor quality of Fameuse but the scab spreads to other trees and makes the apples on them worthless also.

My observation of the McIntosh apple leads me to believe that it is much less liable to scab than Fameuse and the tree is quite as hardy as far as climatic conditions affect it.

The tree responds very quickly to good care. The fruit spurs are formed in abundance and are well distributed on the larger limbs. The tree branches well and is capable of holding up its fruit as well as any tree I know.

Now for the grower who plants for home use and home market for his surplus. I know of no better apple for him than the McIntosh if he live near a city of 2 to 10 thousand, for as I said, the coloring of the apple is fine, quality as good as Fameuse, flavor tasty, the season earlier than Fameuse and it is destined to find a ready market, for good dessert apples are not plentiful.

Now as to the commercial grower, the man who has planted an orchard with the idea that he expects to make it pay and is determined to master the details of spraying, fertilizing and cultivation and who wishes to grow apples that will sell in the markets in competition with fruit from all sections I would not say that the McIntosh is any better than Fameuse. This grower you understand sprays anyway. He knows he must, and if he does as well as they do in Ohio on Mr. U. T. Cox's fruit farm and others of whom we know, he certainly has no

reason to complain of the results obtained from an orchard of Fameuse trees.

So in conclusion I would sum it up about like this; for the thorough, practical commercial fruit grower the Fameuse in my estimation still holds its place in the orchard.

With my observation and experience the McIntosh Red will no doubt give the amateur grower and the old farmer better apples, less scab, larger apples and a better selling article when he has a surplus to dispose of.

For us all I think the McIntosh deserves a place in every orchard with the Duchess, Wealthy, McMahon and N. W. Greening to the exclusion of many varieties that have no valid claim to a place.

DISCUSSION.

Mr. Sperbeck: I have had some experience with the McIntosh Red and am growing it at the present time. I have some here on exhibition and Mr. Coe's paper I think presents it very thoroughly. They are very much in advance of the Fameuse, to my notion, they are a very nice apple. The tree is a stronger and better grower and the season with me is fully as late. I had McIntosh Red kept in a cellar and was using them in January.

Mr. Patten: The question arises in my mind in discussing this apple, that it has been before the public now for quite a length of time. It has been known in Wisconsin, it has been known in Iowa, it has been known in the east for a long time and if it is an apple that is so valuable that it should now be introduced to the public, I would like to inquire why it has not made its appearance and demonstrated its usefulness to the public? Now, when we consider this question of producing fruit, we are reminded of a paper read by the gentleman from Michigan that there is a question of a money consideration in this matter in view of which we should be very careful in recommending planting, and I submit that the Wealthy all over Wisconsin, from my experience and observation and the fact that it has taken a place all over this country and the McIntosh having taken no place at all, that to the commercial man and to the farmer the Wealthy is worth ten just such apples as the McIntosh. It is a larger apple, it is fully as beautiful, it is a better apple and has been demonstrated to be a thoroughly good cold storage apple, not only for one month but for six months, and

so I would like to inquire, Mr. President, where the good judgment would come in in taking up with a new apple like the McIntosh? I want to go a little further with it. When I went from this state perhaps thirty years ago, it was considerably longer than that since I left Madison, but about thirty years ago I planted McIntosh in comparison with Fameuse, Tolman Sweet, Golden Russet and all that class of varieties that are pretty nearly on an equal grade of hardiness, and the cold winters wiped out the McIntosh and the Fameuse, although after the injury they held on and recovered and bore quite a good deal of fruit. I again tried the McIntosh on a more favorable location several years after that. I planted in that experiment quite a good many Russian apples and planted a few McMahan's White, St. Lawrence and McIntosh, and Canada Baldwin and Wealthy, and a good many others that I will not enumerate. But there stands today the St. Lawrence, a large tree ten inches in diameter, never having borne a peck of apples; the McMahan is fully as large, never has borne two bushels of apples in any one year; the Greening stands by the side of it that has borne at least fifteen bushels to one from the McMahan; the McIntosh died out entirely; the Canada Baldwin stands there the hardiest of all the new seedlings that have been introduced, and so I am led again to inquire—of course I have no objections to this apple being tried, but if you are going to do anything more than try it as an experimental apple, I should say that the facts are against doing so.

The President: We are very glad to get just such an experience as this. That was just why this was put on the program, for we are not trying to recommend it, we are trying to find out whether it is worth while for Wisconsin people to try it.

Mr. Bingham: I do not wish to be understood as recommending that apple as a commercial variety for Wisconsin, but I do think there are many places in the state of Wisconsin where the apple can be grown and money made on it for the local market. You understand that there is always a call for good eating apples, calls for an apple that one can ask more money for than for the Wealthy. You can easily ask \$1.50 a barrel more for this apple than the Wealthy, I know it by experience and I think it has a place in some localities, there are places where the apple ought to be tried. It is a larger apple than the Fameuse, I think it will sell for more than the Fameuse from the fact that it is a more showy apple, not from the fact that it is a better quality, it may not be a better quality, but it will sell for more money than any Wealthy I ever saw.

Mr. Sperbeck: I think it is a better cooking apple than the Snow, it is more tart.

Mr. Philips: The Snow apple with me will stand eight or ten degrees more cold than the McIntosh. As an apple for profit I would not plant it.

Mr. Bingham: We have Snow that have been injured in the nursery and McIntosh that came through nicely. It is a matter of location.

Prof. Blair: I might say a little more about the McIntosh Red apple from the fact that it is an apple grown very largely in the section where I come from and it is an apple that I have grown myself personally for some ten to fifteen years. In the first place, I do not believe the McIntosh Red possibly will be a good tree on some of your dark rich soils, unless you pay special attention to the curing of the wood. It is a tree that is very likely, if you give it a chance to do so, to keep on with its growth late in the fall and consequently you will be liable to lose it through winter injury. This of course can be overcome by proper cultivation and by the use of cover crops later on, sowing cover crops along the first of July and getting the wood well ripened up. So far as hardiness goes, it is with us much hardier, we think it is any way, than the Fameuse. The Fameuse you possibly know, a great many of you anyhow, is the apple that we think the most of in the Province of Quebec, in fact we can ship the Fameuse to England and get five dollars a bushel box for it. That has been done time and again by those who make a practice of picking up these apples and shipping them. Of course there is that other point that you must remember in connection with both Fameuse and McIntosh Red, and that is that you cannot grow Fameuse and McIntosh Red and make money at it at the prices that you can the Ben Davis and Duchess and some winter apples. That is one of the impossibilities. The Fameuse and McIntosh Red are dessert apples and they are apples that are hard to grow unless you pay particular attention to spraying and handling of your trees so as to get the crop in the very best condition possible so far as color is concerned and also to pick it and handle it in the very best possible manner. You cannot ship Fameuse and make a success of it in barrels; you cannot pick the McIntosh Red and make a success of it in barrels. I do not believe it will ever be possible for you to do so, because it is an apple, if handled roughly, that bruises and consequently will deteriorate. Now, we have in our cellars at McDonald College still Fameuse that are in excellent condition and we can keep them in excellent condition in common storage until March. The McIntosh

Red we think will stand somewhat longer in average storage. I do not say that we can do it here, because possibly your season will mature the fruit sooner and it will not stay as long in average storage as it will with us. In Nova Scotia where I had most of my experience in growing McIntosh Red we had over 350 varieties of apples, including Patten's Greening and different varieties of Russian apples and different American standard varieties that are grown all through this part of North America and we found that out of over three hundred varieties the McIntosh Red was the most attractive and the apple that we could handle and sell to best advantage of any apple that we had in the orchard. I do not say that that will be the case here, but I do say as far as quality of this apple is concerned, it is equal to any; it is equal in my mind to the Gravenstein, which is the famous apple in Nova Scotia. Do not think that we consider this a winter apple; we think we have to get it out of the market by Christmas time. There are several things to be remembered in connection with this apple; in the first place, you cannot grow this apple profitably without spraying; second, you cannot grow it and handle it as the average apples are handled, and make it profitable; third, you cannot grow the trees here without paying particular attention to the cultivation of trees early in the spring and ripening up the wood in the fall by growing some cover crop. The late fall rains might start a second growth and there would be an injury to the buds that are liable to grow where trees are not ripened up properly. There is another point too that I wish to refer to and that was spoken of here by some one, that is this, that the Fameuse apple is not a good cooking apple, we do not consider it such; the McIntosh Red on the other hand, is considered with us to be a very good cooking apple, much superior to the Fameuse.

Mr. Menn: How about the blighting of the McIntosh tree?

Prof. Blair: I never saw twig blight on the McIntosh, I do not believe it is subject to blight. As I say, I do not think it is a tree that should be planted on dark, rich soil.

Mr. Sperbeck: Is it not a fact that the McIntosh Red is a great deal less liable to the apple scab than the Fameuse?

Prof. Blair: Oh, yes, decidedly so. The Fameuse I think is the one apple of all others that requires more careful attention to spraying to keep it free from scab than any other apple we know of.

Mr. G. J. Kellogg: The idea has been advanced by our friend Patten that the apple has been before this country, as he says, for thirty years, and what kind of showing has it made? If it is so fine, so good quality and so profitable, why are not

more men growing it? At the State Fair two years ago there were three or four apples presented as a McIntosh and Prof. Green could hardly tell what it was.

Mr. Bingham: I think I can explain that. The McIntosh Red is a very poor nursery tree, therefore the nurserymen do not like to grow it. You will find it is rather against the inclination of the agents to talk it, they want to talk the Snow apple, because it is a better nursery tree. They would rather sell you apples like Patten's Greening or Northwestern Greening and some other varieties that are poor in quality rather than talk an apple of good quality. Furthermore, what progress have we made in apple growing in Wisconsin? There are no commercial orchards here, there are no men attending to their orchards in this state the way they are attended to in other states, that is the reason we cannot get apples of good quality.

Prof. Sandsten: I agree very heartily with Mr. Bingham's statement, I think he is about right, but there is another thing I might add to it, and that is that I hardly think that the McIntosh apple has been tried extensively enough in the fruit growing sections of the state. I know it has been tried on the heavy black soil in the southern part of the state and in Northern Iowa, but it has not been tried to any extent in soil better adapted to apple growing in the central and southeastern and southwestern parts of the state and we have not given it a fair showing.

Mr. Patten: I just wish to call attention to the description that the gentleman from Canada gave of the habit of growth of the McIntosh apple to show you that it will never be a success in this country from the fact that it does not mature properly and that our warm falls will start up a second growth on that tree. You gentlemen have seen it in other varieties of similar character and when those warm falls come and the rain comes afterwards, the McIntosh gets a second growth and with the hard winter that follows in this country the McIntosh goes. I will not say that you have not a territory in Wisconsin where the McIntosh may be grown with success, but if you have, right here in Southeastern Wisconsin, along up the lake, along up to Waupaca county to the westward, that would be the western limit of the successful growth of the McIntosh, east of Madison and I just wish to go on record now as saying that the McIntosh will never prove a success west of the city of Madison or west of Waupaca county.

Mr. Reis: We have grown the McIntosh apple in Richland county and it has proven entirely hardy. It is as hardy as the Fameuse or any of those, well, as hardy as Patten's Greening

and has borne fully as well as Patten's Greening, in fact more so, within five rods of a Patten Greening tree, and it will bear fully as well as the Wealthy and it has borne more apples with us than the Wealthy has and it has been a better quality and even larger size. They do not color up as well as do some of the McIntosh that we get from other parts of the state, but they color sufficiently to make fine looking apples. We think that we would have no trouble at all in selling them at a high price if we had any more planted. We have only a few trees and never had any chance to put them on the market, but as far as our experience is concerned I think it is as hardy as any trees that we have.

Mr. Bingham: I would like to ask the gentleman if he lives west of Madison? (Richland Center is 55 miles west of Madison. Ed.)

Mr. Reis: The trees are about fifteen to sixteen years old and they have proved annual bearers. They have never borne exceedingly heavy in any one year, but they have borne quite a few apples in every year.

Mr. Philips: I was going to corroborate what Mr. Patten says. We had it growing sixteen years on good, rich black soil in a protected place and about two years out of five it will bear quite a crop of apples, but I have seen it in the late fall make a growth of sixteen inches in length, I suppose they were mature enough for scions and such winters as we have had they will kill back the whole growth.

Mr. Sperbeck: I grew these (referring to plate of McIntosh apples) at Oshkosh, and I never had any killed back on my trees, never a limb.

Mr. Reis: I have had both McMahan scions and McIntosh scions the last few years and I think there is a greater proportion of the McMahan scions that show a second growth during the season than the McIntosh. I have not found any McIntosh scions that have shown any signs of renewing growth during the season, that is, not as great as the McMahan has.

The President: We have to close this discussion. There has been one question asked twice, and that is, if the McIntosh apple is such a good apple, why has it not been more extensively planted and the answer is that it would have been if it had been advertised like the standard apples, if somebody had a big stock and wanted to dispose of it.

THE SAUK COUNTY APPLE.

(Sometimes called the Hanko.)

ALBERT REIS, Ithaca, Wisconsin.

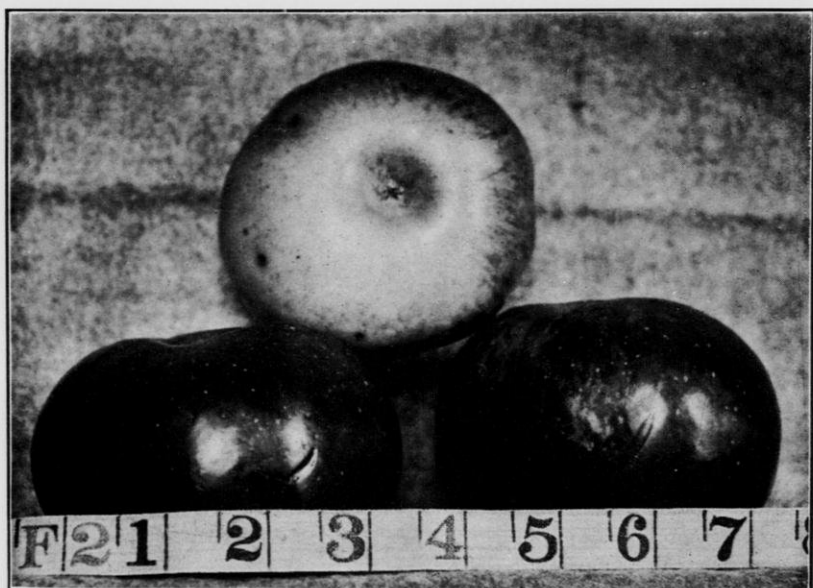
I understand that it is the custom at every winter meeting to give the description and history of such seedling apples of sufficient merit, as have been brought to the notice of the Society.

Since the introduction of the Duchess, McMahan's White, Wealthy and Wolf River, these seedlings have had little to recommend them to the apple growers of the state, especially the commercial growers, save, that they were as good as these now standard varieties and might possibly be able to fill the place occupied by them. The majority were Duchess seedlings, the chief claim for which were, that they were later in season than that grand old variety, but not later than the McMahan and Wealthy and not better in any other respect. Among the winter varieties introduced, the Newell and N. W. Greening are generally rated best, but neither of these varieties are planted by growers who are after the kinds that "make money". In fact, up to this time, Wisconsin has had no known winter variety which could be grown with any degree of profit. Therefore, I think that it will interest you to know that in this Sauk County apple, which we have called the "Hanko" after its originator, we have an apple, a winter apple, with the keeping qualities of the N. W. Greening, as large as the Wolf River, better quality than the Wealthy, with a tree as hardy as the Duchess, and much more productive than any of these varieties.

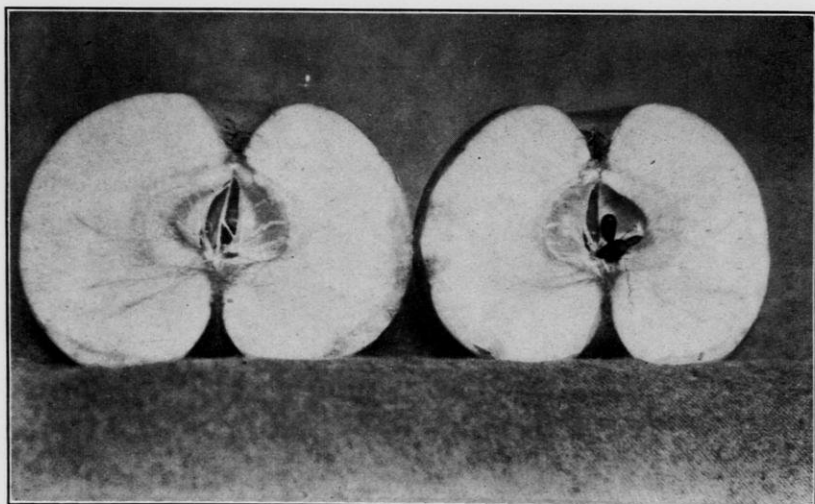
You have all no doubt read the description of this apple, given in the Wisconsin State Horticultural Society Bulletin No. 10, under the heading, "A Remarkable Apple," a very fitting title, as it truly is a remarkable apple.

The tree was planted, along with others, about forty-four years ago, by the father of the present owner, Mr. Ed. Hanko of Sauk County, Wisconsin. This tree was known in the family as the "Seedling" which it undoubtedly was, as many of the people planted seedlings at that time, there being hundreds of them in that vicinity now bearing. At any rate, no one who could be considered an authority in the matter has been able to identify it with any other known variety.

Two years ago last summer, Mr. Hanko while engaged in conversation with my father, John Reis of Ithaca, Wisconsin,



From photograph of Hanko apple.



Cross section of above.

told him that he had an apple tree on his farm which was better than any kind grown in that vicinity, that he didn't think there was another tree like it in the state, and that he was afraid the tree would die some day and this valuable variety would be lost. That fall my father secured all the scions on the tree and grafted them.

This tree has never been pruned nor sprayed, never given any attention or care whatever, except to pick the fruit, yet, for a great many years it has never failed to bear a large crop of apples. No record of the annual yield was kept excepting the last three years. In 1904 it bore sixteen bushels, in 1905 (an off year) fifteen bushels, and in 1906 the yield was seventeen and one-half bushels, notwithstanding the fact that the tree was struck by a hailstorm last July that totally ruined the crops of such varieties as Wealthy, McMahan, Fameuse, etc., which stood in the same orchard, and not over a rod or two away.

Is there such a thing as one variety being freer from the attacks of the codling moth than others? Past experience with many varieties has led me to believe there is. Mr. Hanko is very positive in the statement that the Hanko apple is much freer from worms than any other variety he has. Now it is a well-known fact that those sorts, where the apples grow in clusters, sometimes three or four, sometimes even six or eight or more, close together, and touching each other, offer the very best kind of a place for the female codling moth to deposit her eggs, and the very best kind of a place for these same eggs to hatch and grow into very hungry and exceedingly active worms.

The Hanko apple almost invariably grows singly, rarely do you find two hanging together. This perhaps explains its freedom from worms. The fruit has also always been singularly free from apple scab.

Another point very much in its favor is its ability to hold the fruit until fully matured, there being practically no wind-falls at picking time. This last season will serve to illustrate this quality. The night before the apples were picked, one of the worst windstorms of the season passed through that section, but even then not a peck of apples had been blown off the tree, although the fruit was fully matured. This apple matures about the 10th or 15th of October, but can be picked considerably earlier. Specimens picked September 1st have kept in excellent condition in common cellar storage for five months, and were nearly as good in quality as those picked when the fruit was fully matured, although not quite as large or highly colored.

The tree is of a rather low and spreading habit of growth,

making it easy to gather the fruit. It has borne its large crops without propping or tying up the branches, carrying the fruit with seeming ease, the branch never breaking down.

It has never been known to blight. As to hardiness, the fact that it has stood over forty years in a country where the variations and extremes of temperature are as great as any county in the state, would seem to insure that; the tree being in excellent condition at the present time.

The fruit keeps well in ordinary cellar storage until March or later. In quality it is better than any other apple originated in this state, ranking with the Fameuse, Jonathan, King and Grimes Golden. In appearance it resembles the King somewhat, being even brighter red in color. In point of flavor it excels this variety. The fact of its resemblance to the King would recommend it as a good selling variety, as the King in its season, always tops the market. In size the apple is larger than the McMahon White taken from trees at all approaching the Hanco tree in age, and fully as large as the Wolf River or N. W. Greening grown on old trees.

The very short stem of the apple coupled with its oblate form make it very easy to pack for marketing.

No other apple which can be grown in Wisconsin combines so many points of excellence. Those who are best acquainted with this variety are most enthusiastic, and the more you see and learn of it, the more enthusiastic you will become.

I am proud to have given before this society, the history and description of this, the greatest of Wisconsin's seedlings.

THE HANCO SEEDLING APPLE.

C. A. HATCH, Richland Center.

HISTORY.

It is supposed to be a chance seedling that came with a bill of trees purchased of Freeborn and Hatch of Ithaca, Richland county, Wisconsin, about 1868, but of this there is no certainty as the original planter has been dead some years and the only thing surely known is that the rest of the trees were purchased there. The tree now stands on the boundary line between two fields the row containing one Duchess, one Tolman Sweet and one Transcendant crob. It has neither been pruned or sprayed in its whole history, yet appears to be quite healthy, showing



The Hanko Tree, photographed November, 1906.



Common Barberry.

but little fire blight while Tolman and Transcendent only a few feet away are full of dead twigs and limbs. It has not failed to produce annual crops of fine apples for several years. The growth is strong and vigorous, rather on the Alexander type, upright in habit and but one poorly formed fork in the tree.

FRUIT.

Size medium to large; shape roundish, slightly flattened, irregularly round; stem short; cavity moderately abrupt; calyx closed; core medium open; flesh yellowish, coarse, juicy; quality fairly good to good, sub-acid.

Color greenish yellow striped with red to quite red in the sun, few brown dots near stem.

Season, winter.

The Hanco apple has this to recommend it to the public,—it is perfectly hardy, not susceptible to fire blight and an annual bearer of apples that compare favorably in quality with the Baldwin.

One expert on Wisconsin seedlings said it was the best of them all for quality. It is certainly worthy of the attention of the Horticultural Society.

Mr. Brackett chief of the Div. of Pomology, Washington, D. C., writes as follows of this apple:

“I do not recognize it as any of the named varieties and therefore think it a seedling. The apple is very handsome in appearance and in quality it is good to very good. I think it worthy of further trial.”

Prof. S. A. Beach of the Iowa Agricultural College says:

“I am exceedingly interested in what you have to say with regard to this variety. There is an apple which has been grown to some extent in western New York which I would like to compare with this apple if it is possible to do so. The variety I refer to is the Twenty Ounce Pippin. It seems to me that the apple which you send is considerably superior in quality to the Twenty Ounce Pippin.* I have heard that the Twenty Ounce Pippin was distributed years ago to some extent in the Upper Mississippi Valley.

Whether the variety is one that has been previously cultivated under name or whether it is a new seedling it is certainly worthy of investigating and testing.”

Prof Beach also submitted the following description:

Fruit; large. (Uniformity in size and shape cannot be determined from three specimens but I judge that it is fairly uniform in both.) *Form* rather oblate, and irregular varying from smoothly elliptical to broadly ribbed. *Stem* short, sometimes swollen at point of attachment to the tree. *Cavity* medium to rather large, acuminate, or nearly so, pretty deep, moderately narrow to rather wide, usually somewhat furrowed or wavy, partly or wholly russeted. *Calyx* medium or below, nearly closed; segments medium in length, acute, pubescent. *Basin* medium to rather wide, quite abrupt, moderately deep to deep, nearly smooth or with rather wide obscure furrows.

Skin smooth, rather pale green varying to yellow, washed with red and splashed with carmine. Well colored specimens are wholly overspread with lively red so that the *prevailing color* is red relieved by touches of yellow.

Calyx tube medium, cone-shaped. *Stamens* median.

Core distant, medium, or above, somewhat abaxile; cells symmetrical, partly open; corelines meeting. *Carpels* roundish, mucronate, but slightly emarginate if at all. *Seeds* not numerous, medium or above, brown shading to dark brown, acute, sometimes tufted.

Flesh yellowing, moderately coarse, tender crisp, juicy, sprightly, mild sub-acid, agreeable in flavor and good in quality.

DISCUSSION.

Prof. Sandsten: We have been listening very attentively down here and some one has suggested that if the McIntosh Red had been advertised and written up as nice as this apple has been and if scions of this apple had been distributed, if we would have an apple like the one described, and I do not doubt the veracity of the writer, it certainly would be a great thing for us and I hope that his predictions are true and that we can get some trees of this variety.

Mr. Bingham: I understand him to say that this apple was larger than the McMahan, fully as large as the Northwestern Greening. I would like to ask him why he did not bring some large specimens down with him.

Mr. Reis: I said those varieties grown on old trees. I do not believe you or anyone else here has brought an apple from a tree, either Northwestern Greening or Wolf River, that is over forty years old.

The Secretary: I think there is no question about the quality, there certainly can be no question about the hardiness of

this apple. There has been until recently some slight question or doubt as to the identity of the apple. We have hesitated to ask this society to name the apple lest it should finally prove to be one of the older named varieties, but it has been submitted to most of the best judges of apples in the United States and not one of them ever dared to say that it is a named variety. I pronounce it the best apple grown in Wisconsin. I pronounce it as good as the best grown in any other state with possibly one or two exceptions. I know that it is hardy. I traveled nearly forty miles by team to see the tree, I have seen the tree and I have the word of the present owner that the tree is forty years old. It has grown in the sod, it has evidently never been pruned, shows no mark of pruning or spraying or any other care. Now, I care not what the variety is, a variety that will persist as long as that and bear fruit as good under those conditions is worthy of a name. It has been going forty-four years without a name, it is time we name it. I move that we adopt this apple in the fruit list of the Wisconsin State Horticultural Society under the name of "Hanko."

Mr. Menn: Has this apple been kept in cold storage?

Mr. Reis: This apple has not been kept in cold storage, it has been kept in common cellar storage. All the apples on the tree were frozen during the cold spell in October and they were picked while they were still frozen, consequently mellowed up somewhat, and they did not keep as well as usual; other years we have had no trouble in keeping them until March first.

Mr. Toole: I second the motion of the secretary.

Mr. Kellogg: Has it been sent to Washington to be identified?

The Secretary: Twice.

Mr. Reis: It has been sent to the pomologist in Washington twice.

Motion to name the apple the "Hanko" was then put to vote and carried.

Mr. Sperbeck: It seems to me we have an ideal apple there for the farmer. There are a great many farmers who never prune and never spray and if they can get that variety of apple, they can grow it.

Mr. Philips: I make a motion that the apple be put in the Wisconsin list of apples for trial. (Seconded).

Mr. Kellogg: I would like to ask you, Mr. President, what is the object of that motion? There is not a scion to be had nor a tree to be had, what is the use of putting it on for trial?

The President: To get it before the public.

(Motion carried).

CALIFORNIA AS A FRUIT STATE.

GEO. J. KELLOGG, Lake Mills, Wis.

My three years in California, from 1849 to 1852, had always created a desire to return and visit the old gold fields and the fruit orchards in the valleys. This desire was gratified in the winter of 1905-6. Our tickets took us by the Northern Pacific and down the coast through Washington, Oregon and the entire length of California. 1027 miles. We traveled on this trip 7418 miles. January 11th I saw seventy-five plates of premium apples at the Oregon winter meeting at Portland, the finest collection of apples I ever saw. They had been allowed to put on all the perfection of coloring far exceeding the same fruits at the four national exhibitions I had previously attended. One would naturally expect a few apples to eat while passing the whole length of Oregon; with three weeks visiting in that state only one place we found any good apples.

My first three years in California (and I traveled nearly one thousand miles) I found only one patch of wild grapes about the size and quality of the Concord and one field only of at least 100 acres of choke cherries and no other fruits. The Mission grape had obtained some notoriety in some of the valleys, this I did not see.

Since the state has become noted as a fruit state, the grape industry has been over done. Thousands of acres of grapes have been dug up and planted to oranges then to peaches, pears and prunes and yet again these groves have been planted to walnuts. These changes are continuing to the present time. Some seasons are unfavorable to this fruit or that; failure to get cars has caused thousands of car loads of oranges and lemons to rot on the ground and at the packing houses; now the walnut groves are threatened with a serious blight. Apple orchards have been dug up as unprofitable. Mrs. H. M. Huntley informs me that a large apple orchard in Santa Clare was dug up. Orange or fruit orchards of five to ten acres are called "Ranches" formerly the term "Ranche" applied to a "range" of a thousand acres. There is a great deal of unrest. Everybody is wanting to sell, but it is usually at one thousand dollars an acre. I learned of a few instances where persons had bought ten acres and paid for them with one or two crops.

Thousands of "Ranches" are paying big returns, thousands are not paying expenses and large numbers are dying or have been abandoned for want of water. At times they have too

much water. After we visited Fresno the 6th of April, the floods came down from the mountains and covered 25,000 acres with water from one to ten feet deep, washing out orchards and vineyards and doing immense damage.

A friend of mine traded a \$12,000 property in Chicago for a twenty acre "Ranche" ten miles east of San Diego giving a \$5,000 mortgage to balance; with no experience, a shortage of water, interest could not be met. Foreclosure was the result. The man died, his widow now keeps a little country store.

Another cousin next door cultivated ten acres of oranges and ten acres of lemons for eight years and did not make expenses. He had bought a water right for \$900 and then had to pay \$90 a year for the water. Some years this was insufficient and he was compelled to put down a 75 foot well and attach a gasoline engine at a cost of \$1,000. With this double water privilege he expects to make it pay.

Messrs. Clark Bros. bought adjoining him twenty acres each, put on \$20,000 improvements on each place. After running it for years they abandoned both places because they would not pay. Here is a chance for the one dollar "tenderfoot" who comes along. T. J. Bryant's well near Spring Valley is only 75 ft. deep giving plenty of water for twenty acres while only a short distance on the hill at Lemon Grove a well 615 feet gave no water.

Twenty-five acres of oranges near Spring Valley Station owned by an Englishman was mortgaged, sold and is going to ruin. Six hundred acres of lemons at Lemon Grove worked from 8 to 12 years have not generally paid expenses.

I rode through Eagle "Ranche" which cost \$50,000. This brings no profit. I visited the Gen. Grant Plantation costing between thirty and fifty thousand dollars near Mesa Station. This is run at a loss.

Lemon Grove packing houses charge 59½ cents a box for washing, sorting into two grades, drying, curing, packing and selling. At Santa Anna Mr. Bristol sold on the trees 8 acres navals for \$900 and 2 acres Valencia for \$1,000.

Mr. F. Messer sold the product of 1 acre of strawberries for \$700. The strawberry gives a crop from October to December and again in April, May and June.

I visited R. B. Lane's orange grove in Redlands. He pays \$350 a year for water for seventeen acres. He has been at it for many years and he makes it pay. He also has a valuable ten acre lemon grove right in Holly Wood. When it fails to pay in fruit he can cut it up into city lots and realize \$20,000 an acre.

I visited a friend at Fair Oaks, Sacramento county. He has ten acres of oranges, pears, peaches, apples and grapes and ten acres of olives. One year (1904) he succeeded in getting water enough from the water company. Then early and unusual rains came and the oranges puffed up so large they were worthless. This last year the high winds spoiled half his fruit.

At Penyon, east of Sacramento, we visited friends who had put \$12,000 on about twelve acres and would sell at much less. He had often shipped peaches east and had express charges to pay besides losing the fruit.

I did not find a place or man who could sit down on a fruit "Ranche" and coin money. It takes money, brains and muscle to win and often years of experience.

I traveled sixty miles about Los Angeles to look up the strawberry business. I visited acre after acre. Some were picking April 1st half ripe berries, grown without mulch. The plants only had about three or four leaves. Some with low culture, others with high ridges between water ditches 18 to 24 inches below the surface. On one field they were throwing away more defective berries than they saved and asked twenty-five cents for the green berries they were picking up to the 18th of April. I saw no good flavored berries. With this mode of culture and the feeble condition of the plants I cannot see how the industry ever pays. The season of 1905 and 1906 was cold and wet, worse than usual. At Holly Wood, Walter Benedict showed me his books where he had from one and one-half acres of strawberries taken in \$1,800 in one year, selling at 25 cents to 30 cents a basket which holds a little less than 12 ounces. This is the size of the berry basket of southern California. Mr. Benedict had ten acres. Some of it worthless hills but valued at \$35,000.

The four months we were there we did not get a dish of good berries and yet they claim to have strawberries the year round. The 18th of April they were selling at 10 cents a basket.

A person going to California to stay wants at least \$60,000 to start with and a few years experience before investing in anything. Churches are now on a basis of "16 to 1." A Sunday sitting is from one to sixteen dollars each. Preachers get from \$3,000 to \$6,000 a year. Tourists were welcomed in proportion to their pile of gold.

The insect pests I did not find as bad as I expected. Some spray and some do not. Deaths occur among the children from eating poisoned orange culls that are peddled about the streets. These are the culls from the packing houses. The prices at

retail for good oranges in Los Angeles was just as high as in Wisconsin.

For the fruit industry considering the advantages of soil, seasonable rains and the markets, give me the best orchard sites of Wisconsin rather than California.

As to climate there are many locations in valleys protected from floods that get the sea breezes without the high winds that have plenty of water for irrigation. These choice locations are few and the good land is so scarce that it is held at from one to three thousand dollars an acre. With these conditions and the earthquakes, the rains, mud and winds of winter, the heat, lack of water, dust, drought, winds and fleas of summer you may have its climate and roses. Give me Wisconsin.

DISCUSSION.

Mrs. Treleven: I have heard say that people get so attached to one place that they do not think there is any good in any other place. When I was in California I did not see any of these bad things, I was not looking for them perhaps.

Mr. Bryant: I think it is only fair to the state of California to say that shortly before I left home my father had a letter from an old friend who was one of the early members of the Illinois State Horticultural Society and among other things this gentleman, who is pretty well along in years, stated that they had a twenty-acre ranch, as he called it, devoted to growing oranges and lemons and he made the statement that it was netting them annually an average of ten per cent on \$3,000 per acre, in other words, \$300 per acre per year. He is a man that I know of good veracity and I think we might take his statement.

Mr. Kellogg: I don't question this gentleman's statement; you can tell any story on either side of the question and it is true. My friend, Mr. Fargo, spent a number of winters there and can tell us something about it.

Mr. Fargo: I think I am on the other side of this question from my Brother Kellogg. A friend of mine, Mr. Lane, has an orchard of oranges and lemons at Hollywood and I said to him last winter, "Why don't you sell it off, fifteen acres at \$1,000 an acre, you can get for city lots. And he said, "It is paying me interest on \$75,000 to raise lemons."

Mr. Patten: I have had a little experience in California during three or four winters that I have spent in the state. I

think that Mr. Kellogg's delineation of the condition of California is very truthful. I am free to say that from my observation in that state, and it has been from Los Angeles to seventy-five miles north of San Francisco, all through that region, having friends in Santa Clara valley and all up and down the state, I am free to say that I believe that fruit growing in the state of Wisconsin, in Northern Iowa and Minnesota today is a more reliable industry than it is in the state of California. There are so many conditions there that people who have never been in California with a view of studying them cannot understand.

The whole state is made of washing down of mountains, made, as Mr. Kellogg said, of freshets that come down from one to twenty feet deep and wash the soil out in the valleys and here is a beautiful tract of land, twenty acres laid off here; another twenty acres just along side of it. A man plants a prune orchard here and he has a grand success. It is a magnificent output that he gets from that twenty acres. The other twenty looks just as good, but he has never gone down there with a test auger or anything of that kind to examine the soil, and whereas the wash of the country has left this twenty acre tract with twenty feet deep of the richest kind of soil, the other tract is only three or four feet deep and below is a mass of gravel, some former wash that has come down from the mountains and that man's tract is an utter failure. Where you find one that is a success, you will find plenty that are failures all over California. Referring now to a little work that my son and I did last spring, we planted ten acres of orchards, planting them with summer and fall varieties, and I believe that we will be able to take in the next fifteen years from that ten acres of ground as much clear profit as they will be able to take in from any ten acres of ground of the very best in California and it does not cost five hundred and one thousand dollars an acre either to purchase such land in Wisconsin and Northern Iowa.

THE DOUSMAN HOME FARM SCHOOL.

The President: Gentlemen, we have all of us heard of the Home Farm School which is located at or near Dousman between Madison and Milwaukee. We have with us Mr. Melville, who will give us a little talk upon the aims and objects of that school.

Mr. Melville: Mr. President, we do not raise apples or pears, we do raise a few strawberries, raspberries, currants, and

gooseberries, but we do aim and try to give boys a chance, to give the boy a chance to make a man of himself, to give the boy a chance to develop into a good citizen of the state, to give the boy a chance to grow where he would have a chance to be dwarfed in his present surroundings. For several years it has been noticed that the boys going to Waukesha were partly of a certain class and a few of them of a different class and so the children of the state have been divided into four classes, the children who are normal children, the boy and girl who is cared for by his or her parents and who goes to school; the boy or girl of a certain class of parents who do not seem to be energetic enough to wield a strong influence over the child and make that child something that is fit for school more than half of the time. This class come into the class of misfit children. Then the boy or girl who comes from the surroundings of the streets of our cities and villages, the boy and girl whose environment is such that it leads them into contact with crime, that leads them into contact with those that are criminal, that leads them to become criminals. Then the children of the truly vicious parents, those that are vicious, not only from their heredity but from their surroundings generally. Now, these four classes the state cares for, first in our public schools the state cares for the large proportion of the second in our public schools and the state cares for all of the last in our industrial schools, but where are we going to place these few unfortunates of the second class and all the third class and where are you going to place them? We find these boys everywhere; we do not need to go outside of Madison, we do not need to go outside of the village of five hundred inhabitants to find them. This class, it is evident, cannot be placed among the normal scholars in our schools, they must be cared for in another way. Is it fair to send them to Waukesha, to place them with environment children, place them in contact with the criminals? It is the only place where the state can send them and so under this head a few of the people of the state of Wisconsin are organized as a Wisconsin Home and Farm Association to care for this class of boys, to take them from their environment and take them out in the country, to take them upon a farm, to teach them to work, to give them a common sense education, where the teacher can give them the individual attention that they need, and give them a chance to make something of themselves.

A few years ago last October this Association rented a farm just west of Belleville near a lake. Here those boys, none of them but what was a source of worryment to the principal and dread to the teacher, many of them had been almost verging

upon criminality, five of them we know are self-supporting boys earning their own living upon farms or in offices after being in the school for two years. We hope in this way to make good citizens of the boys that we take into our schools. Where are we going to obtain the boys? We obtain them from a great many sources; we obtain them from truant officers of the cities, we obtain them from probation officers of the cities, we obtain them from private individuals who find a boy is getting a bit bad, put him in a place where he can be cared for, and where he can get help to make a man of himself in this way and we obtain some of them from the courts where the judges claim that it would be a sin against a boy to send him to Waukesha. In this way we have during the three years of our existence cared for about forty boys. Of these, ten boys have gone out into the world to earn a living for themselves. Nine of these boys—remember of this class that we say are criminal and which should be placed in Waukesha or wherever the state says—nine of these boys have proven a success, are at present self-supporting. One boy, weak-minded, under very bad conditions was taken back by his mother to the city and has proven a failure. He got into bad company, he was driven out of the home evenings by the mother, associated with the gang and the gang went bicycle riding one day and borrowed bicycles and the judge thought that the boys should go to Waukesha and learn not to borrow bicycles or anything else. In this way we think we are doing a good work for the boys of the city.

How are we going to succeed with our work? We must depend on the charity of the people of the state. We purchased a farm two years ago and we are paying in small payments for this farm. We started agricultural work and horticultural work. Some of the nurserymen two years ago this coming spring donated to us quantities of raspberries, strawberries, gooseberries and currants and the boys have planted and cared for these. We had a crop of raspberries from our bushes last summer, some strawberry beds have been started, but the strawberries failed to materialize, but we have the boys interested and we are making men of these boys. I say, we are dependent upon the charity of the people of the state, and we wish the people of the state would investigate our work. If they have boys in their vicinity that are bad boys, that are going to be bad, not vicious boys, not criminal boys, but the boy that is more sinned against than sinning, boys that Judge Lindsey says must not be sent to a criminal factory, these boys we are trying to make men of, we mean to help these boys to help themselves. We do not claim we can make a new man; we claim by forma-

tion we can make more out of such a boy than we can by reformation. Now, we are in the market for boys, we have room for them. We are also in the market today and we hope on this farm to put up buildings on which we can put fifteen to sixteen boys under a caretaker who will be called the "House father" and assign them to different cottages on the farm and bring up the boy under good healthful surroundings where they will have good healthful work, where they will have occupation and where they will have instruction and to do this we must have the aid of the people. We hope that this farm, which is in the great strawberry section of the state, we hope to have a farm upon which we can raise strawberries and raspberries; we hope, in fact, to raise a few apples and such things at some time in the future for the boys and we want the help of the State Horticultural Society in starting in this work. We want their aid in this, we want their aid also in building new buildings, but we find we want the aid of all the people of the state in stocking our farm and building it up and placing it in condition in which we can have these things. When a boy comes to our school, the first thing we find about him is that he has learned this lesson, from whom we do not know, "The world owes me a living," and we must teach that boy that the world owes him a living if he earns it. He must give us work every day to sustain himself, he must give his work to show that he is earning what he is getting from the school and what he is to get from the world and it is the great lesson which we have to teach them. What do the little boys do? Well, the little boys do a great many things. The boys plant and care for strawberries and raspberries and currants, they plant gardens and care for onions and peas and beets and so on. They pick them, they box them they prepare them for shipment to market, they do everything of this kind. They work upon the farm in other capacities; learn to handle a team and work in the harvest field, learn to shock oats and care for them. They learn to care for cows and horses and sheep and hogs and they learn above all other things that there is something to do for them in the country and there is a place for them where they do not have the gang to annoy them and you will find these boys even if they do go back to the city say that they wish they could go to the farm again where they can be free, where they can live as they want to live and where they will be free from the gang. We ask you to give us all the individual assistance that you can. There is another phase which may interest the ladies. We teach the boys and girls to do housework; we teach our boys there to be girls, let us say, the boys wash dishes, they scrub floors, they prepare

vegetables for cooking, in fact they do everything that a girl should do to help her mother and they do it willingly, being placed off in sections, some of them excelling even in this work and if you want to know why we do it and want to know what good it will do them, as a lady asked me, I said it was good for them and the only reason I could give was that if the fellow ever married, he would learn to sympathize with his wife.

The President: Before we adjourn, I would say that this is a very worthy enterprise. A good citizen is worth a great deal of money and if we can help to make good citizens, we are helping the state to become richer, and the nation. I am sure that any assistance that we can give this institution will be gratefully received.

FORESTRY CONDITIONS IN WISCONSIN.

E. M. GRIFFITH, State Forester.

Mr. Griffith: My subject was assigned me "Forestry Conditions in Wisconsin," but, as you all know, forestry work in Wisconsin is rather new, and so in the few minutes that I will speak before I commence with the slides, I am going to explain something about the whole forestry movement in this country, with your permission, as in that way you will get an idea of what has been leading up to it in this state.

In the first place, I want to emphasize what forestry is. A great many people have the idea that it is associated with landscape gardening. It is not at all. Forestry is the conservative management of forests so as to secure successive crops of timber, the idea being to cut conservatively and so always have something to cut, in other words, treating the forest as if it is a crop, as it is, instead of cutting it all at one time and thereby destroying it.

You probably know that forestry is a very old profession abroad; it has been practiced there for hundreds of years. If you travel in Germany, France, Russia, England, if you go to India, if you go to Japan, you will find the forests carefully managed both by the government and by individual owners. All those countries have realized that there is a certain part of their country which is suitable for agriculture and another part of it which is only suitable for the growth of trees, and they know very well that if the forests are destroyed that the watersheds of the country very soon cease to be protected. You will

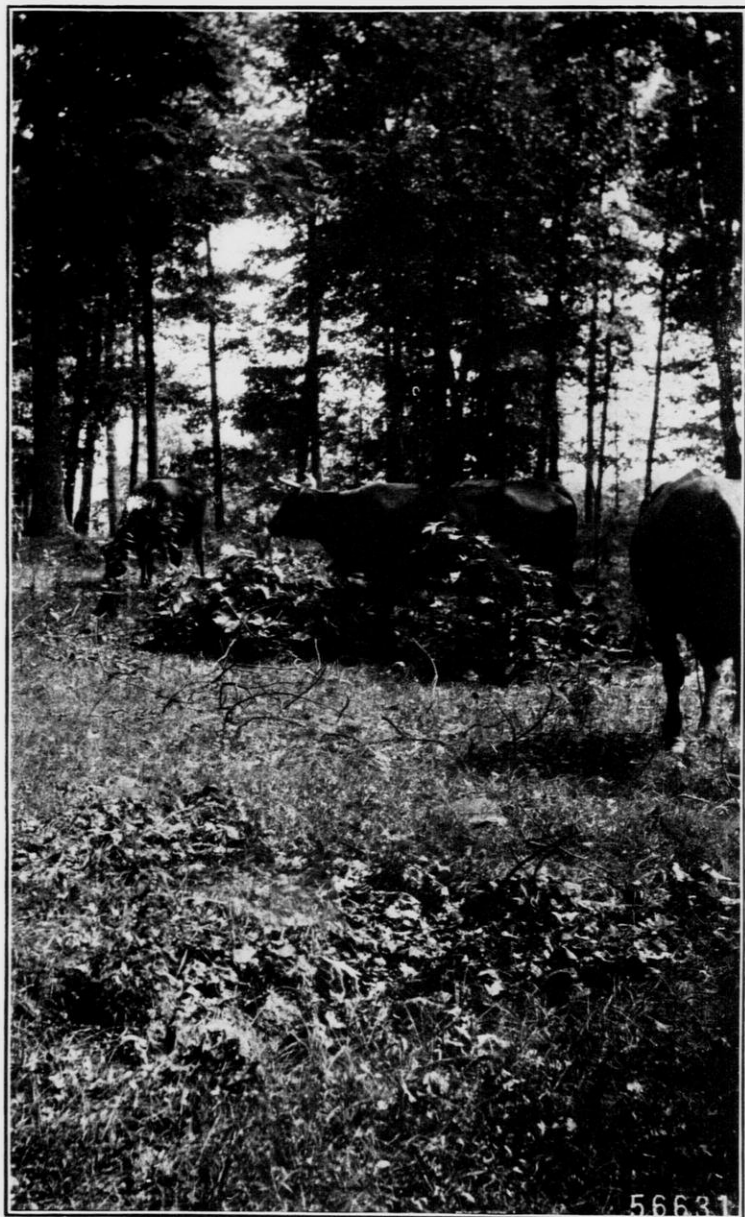
find that condition in India, you find it in China, as I will point out to you later, you can see for yourselves as the slides are shown on the screen.

Forestry in this country has only been practiced for about ten years. It was first started by the national government under the administration of President Cleveland and he commenced by setting aside, that is, withdrawing government lands in the west, notably in the Rocky Mountains and the Sierras and setting those aside as forest reserves. There was a storm of protest in the west from the lumbermen, cattlemen and miners, because they did not understand what the movement was, because they thought forest reserves simply meant parks where people could amuse themselves, where eastern men could go to hunt. The opposition was so strong that congress at one time abolished the reserves, but they were again created by Cleveland, who established more; McKinley kept up the work and Roosevelt has pushed it very strenuously, as he does all things. It is interesting to foresters to see how public opinion has swung around; instead of there being opposition, it is amusing to see how the miners and cattle owners of the west are petitioning the government from time to time to add more land to the forest reservations, particularly the ranchers, because they find the protection of those forest means that they will have water in the low land that can be used for irrigation.

I want to touch upon a tremendous work that the government is doing in the west, that is, in irrigation, which should certainly interest this Society, because it means, as the Geological Survey promises, that the land between the Mississippi and the Rocky Mountains will support double the population that is living there at the present time. As the geologists look over the land that can be irrigated, thousands of acres of land which now is only supporting sage brush and cactus, they find that much of it can be irrigated from the great rivers, and you, gentlemen, would be astounded to see the productiveness of that land as soon as irrigation is applied. The orchards on those lands are the most magnificent I have ever seen, but what the Geographical Survey of course particularly appreciates is that the first thing they must be assured of is a permanent supply of water, so they have worked hand in hand with the forest service and they have asked the President to set aside such lands as will further these projects of irrigation. It is a tremendous work that is being done there in the west. I just received an announcement from Washington today giving the areas of the forest reserves as they are being increased every month. I see that last month they were increased by over a million acres.

Today there are 128,000,000 acres of forest reserves in the United States. The work is on a tremendous scale. Ten years ago I do not suppose there were to exceed twenty foresters in this country, now the Forest Service has over 3,000 trained men on the forest reserves and the forester is clamoring for more men all the time; to properly man those reserves they would need 20,000 men and the receipts are simply astonishing. They have said to congress, "If you allow us to manage those reserves as they should be managed to get them in proper shape, we will promise in four years we will not ask for any appropriation." And the promise is going to be fulfilled. It was upon the invitation of the people of the west that the open ranges were all put under the Forest Service, so that the Forest Service can rent, lease and take charge of the open range for the government. The use of the timber, the protection of the stream and also the agricultural land within the forest reserves, all go together.

To pass rapidly from what the government has done to what the states have done,—New York state has been most active in forest work. We all know that there is a tremendous demand in New York that something be done to stop the cutting of timber around the head waters of the Hudson river; it came from the captains of boats on the Hudson river who found they could not navigate the river because the water was getting so low and they asked the state to forbid the cutting of timber within ten rods of the banks of the river. The legislature looked into the matter, and they said that that would not cure the evil, that they must go to work and purchase land and create a large reserve. New York was not so fortunate as Wisconsin in that all state lands had been sold and lands which they had sold at about twenty-five cents an acre they were glad to buy back and were very fortunate to get at three dollars, so that today New York has a forest reserve of one and a half million acres and the people are clamoring to have the whole Adirondack region purchased. Pennsylvania comes next with a reservation of 700,000 acres and Wisconsin now ranks third in area, we have in our forest reserves 274,000 acres. The state of Michigan has 40,000 acres and Minnesota about the same amount, including her large parks, which are really forest reserves. As President Roosevelt has said to congress, it is the biggest problem before this nation today, there is no use in dodging the issue, there is going to be a timber famine in this country, we cannot help it because we are cutting far and away in excess of the amount that is grown. They figure today that there are two hundred billion feet of timber standing in the



Cattle feeding on young sprouts in a wood lot.
Illustrating "Forestry," by E. M. Griffith. This and following
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Forest Service, Washington, D. C.

country and our rate of consumption is such that within fifty years practically the supply will be gone. The amount of cutting is not so bad as the amount that is destroyed annually by forest fires. That is the tremendous thing. I want to read just a word that President Roosevelt said in one of his latest messages to congress on this subject:

"You all know, and especially those of you from the west, the individual whose idea of developing the country is to cut every stick of timber off of it and then leave a barren desert for the homemaker who comes in after him. That man is a curse and not a blessing to the country. The prop of the country must be the business man who intends so to run his business that it will be profitable for his children after him. That is the type of business that it is worth while to develop. The time of indifference and misunderstanding has gone by. If the present rate of forest destruction is allowed to go on with nothing to offset it, a timber famine in the near future is inevitable. Fire, wasteful and destructive forms of lumbering and the legitimate use taken together are destroying our forest resources far more rapidly than they are being replaced. It is difficult to imagine what such a timber famine would mean to our resources and the period of recovery from the injuries which a timber famine would entail would be measured by the slow growth of the trees themselves. You have got to act in time or else the Nation would have to submit to prolonged suffering after it had become too late for forethought to avail."

The two points I want to call your attention to in this,—because President Roosevelt, as you know, is so remarkable for hitting the nail on the head in nearly every subject he takes up, and he does know forestry because he knows the west and he appreciates the need for it—there are two points he has emphasized very well. One is that after the timber famine has come you have to wait for the slow growth of the trees themselves before you can rectify the mistake. When you come to think, it is about the only great resource we have that is in our own hands to manage, or mismanage, as we please. When we take out the coal, that is expendable, we cannot make any more coal; when we take out the oil, we cannot make any more oil, and the same with iron and gold and silver, but we can manage our forests so that we can always have a supply of timber. And the second point is, that terrible destruction that is left by lumbering and which means a barren desert for the homemaker that comes after, that is a thing that you from the northern part of the state will, I am sure, appreciate.

In Wisconsin the forestry movement commenced in 1903.

The legislature passed a bill providing that all the state lands should be set aside as a forest reserve and afterwards in committee they tried to better it with a bill providing for the sale of the lands and it got badly mixed, so that it provided both that the lands should be in the forest reserve and sold at the same time, so that the attorney general and others said that the best thing to do was to pass another bill at the next session of the legislature, and at the last session in 1905 we introduced a bill and the legislature passed it and it has been pronounced the best forestry bill in the United States, and it ought to be, because we had the experience of other states to guide us. The legislature was extremely generous to us, they gave us all the land which the state owns north of town 33 and provided that it should be in the forest reserve; that amounts to 254,000 acres and at the last session of congress the federal government granted us 20,000 acres to be added to the forest reserve. The provisions in our state forestry bill are broad. In the first place, one of the underlying principles of forestry is that you must not take any lands for forest that are suitable for agriculture. The reason for that is that in any country and state there is land that is only suitable for forest and not for agriculture. A good many land agents will tell you that it is not so, that a whole state and county is a perfect garden of Eden and that the whole state is fit for agriculture. I only wish that was so, but we have not found that so in our experience. The forestry bill provides that we may sell agricultural or scattered lands and that the proceeds shall go into the forestry fund and the money expended for more lands. We have now in Oneida county a fairly solid patch of 100,000 acres and we hope to add to it until we can get to the point where we will protect the flow of the Wisconsin river and also largely the Chippewa on account of the two branches of the Flambeau river that head up into that forest reserve, because that is the main reason for forestry work in this state. You all know what a wonderful lumbering state Wisconsin was. You know what a magnificent stretch of forest we had through the northern part of the state and you know the wealth that came to the lumbermen and the reason they became so wealthy, more than in many other states was because they had this magnificent net work of rivers on which to float their logs; it was child's play compared with the work in some of the eastern states. Now, that network of rivers means that Wisconsin has magnificent water powers and as the lumber disappears, the state will go to manufacturing. Last year the geological survey found over 100,000 available horse power between the dam at Kilbourn and Grandfather



Two freshly turned furrows completely checked progress of the surface fire.

Rapids. That is on one river, but this river, our great river of the Wisconsin, will not be very valuable for manufacturing plants unless we can assure the men that come in and build mills that the flow will be uniform and that is what the forests do, they act as a great sponge in holding the moisture and giving it off gradually.

You have often heard the claim made that forests affect climate, that they bring on rainfall. That is one of the very rare things forests will do under extreme conditions. I have seen myself, in arid plains, under extreme heat, where it was too dry and hot for a drop to fall, but when the clouds got over the cooling forests, they would drop their moisture. In Wisconsin, surrounded as we are by great lakes, I think that the influence of the forest in that regard is so small that it may be left out of consideration. But here is the important point. In the spring you will find the snow banks hanging on in the woods after they have long since disappeared in the open field and the water, is soaked into the humus, and works down gradually through the surface and is carried off in underground streams, so that you will find the streams in forests are uniform throughout the year but streams which arise in cut-over countries are subject to terrible, violent floods after heavy rains or snows and sink to a mere trickle in the summer months, and of course it is important to manufacturers that the flow be uniform. That is the main object of forest reserves in Wisconsin. It is to protect the headwaters of our important streams, and, second, to insure a supply of raw material to those people who are going to use those water powers. People have said, "Why don't you take the money and buy hardwood lands?" and I say, "Hardwood land is on areas where there is good soil and that ought to be used for agriculture and the hardwood areas are not on the watersheds of important rivers and as we want to preserve the uniform flow of rivers we take the land that is cut over and unsuitable for agriculture." We have as I said, three forest reserves, one on the headwaters of the Wisconsin and Chippewa, another along the St. Croix river in Burnett and Douglas counties and a third, which will also be a public park, on the Brule river in Douglas county. I do not know if any of you know the Brule river, but it is considered one of the most beautiful streams in the state and there we expect to have a fine forest reserve and park. I can show you the different features of forestry as we go along with the slides.

SLIDES.

This photograph was taken in Germany, in the Black Forest; you will notice how closely the trees stand. This forest has been brought into that fine condition by careful cutting and as you all know if trees are obliged to grow densely, they must shoot up without forming side branches, consequently, if you keep the timber crowded, you get long, clear, straight logs. You see that exemplified here, because the trees that are getting side light are branched out. If the light strikes dormant buds on the trees, they will develop.

I put in here a few slides showing you the typical forests as they formerly existed in Northern Wisconsin. This is an example of a virgin white pine forest such as formerly covered the northern counties of our state, but has now become so scarce that a number of gentlemen have requested us to keep a small area of forest like that so that people in fifteen years to come could see what a good big white pine looked like. The rise in stumpage values in Wisconsin has been perfectly enormous and that has led to much more careful cutting in the present than it used to be. An enormous amount was left in those days which would be taken today and the slash which was left caused such severe forest fires that everything was destroyed.

This is the Norway pine of Wisconsin and it is very seldom today that we see long, clear, beautiful trees like this. Those were grown under the crowded conditions and that accounts for their shape.

Here we have the hemlock forest, which is playing so important a part in the state. The white pine is only valuable for its lumber, but the hemlock is not only valuable for its lumber, it is extremely valuable for its paper pulp and also its bark is important in tanning. The supply of hemlock in Wisconsin is very limited and therefore there is all the more necessity that the supply shall be carefully handled, because, in the future, if our paper mills do not have hemlock, it is very difficult to know what they are going to turn to.

The hardwood forests have been operated in only very heavily during the last few years. We have sections in the state in Oconto county, in Forest county and in Polke county, where we have magnificent stretches of the hardwood forest just the same as you see here. Those forests are fairly well protected from forest fires as compared to the coniferous forests which have already been destroyed.

This shows the last class of timber in Wisconsin to be oper-

ated upon very heavily—the much despised jack pine of a few years ago. It is now being cut by some mills and put in with white pine, but I think its value in the future is going to lie very largely for fence posts and particularly for ties. The railroads in the country are finding that the tie supply is one of the most important things which they have to face and in order to help out their supply they are beginning to treat their ties with creosote and with zinc chloride or sulphate treatment. They find that these very porous sappy pines make the best ties of all on account of their pores, because the treatment goes right through them and consequently they will last much longer than a very valuable white pine. You may have read in the papers that a good many railroads are now planting their tie timber; the Pennsylvania road is planting thousands of acres; Dean Henry told me just lately he had been on a trip to the East and as he went along the Pennsylvania road and saw those large tracts planted, he thought they were large orchards, but they are not, they are trees which the Pennsylvania are planting, looking to the future for their supply of ties.

Any of you who have been up in the lumbering region know what a slash is, that is the tops of trees which are left after lumbering operations, lying on the ground in the sun, they become thoroughly dried out and when a fire starts it destroys practically everything that is on the ground.

Here in the foreground is a large amount of slash and the lumber company operating on this tract had stopped right at this point, meaning to save this forest and cut it more conservatively, but they did not dispose of their slash and you will see the result on the following slide.

This shows the ground taken at a close distance after the fire had run through. It killed everything and the standing dead trees were finally blown over and will furnish fuel for another fire.

This is what the President means by what the lumberman leaves for the homemaker. You see here land that has been repeatedly logged over and then burned. You can see the dead trees which eventually will be blown down and furnish fuel for future fires and those fires have been so severe that they have destroyed all the humus on the soil, and the humus is the most important thing, because it is the thing that the farmer could depend on as being the rich top soil and a fertilizer, and it has been burned, as you can see in the picture, right down to the white sand. There are millions of acres in this state and in Michigan and Minnesota which have been left in just that condition and it is an extremely serious question, not only for

the counties in which they lie, but for the whole state as to what shall be done with it. The tendency of course for a land company that has cut-over lands which have been left in that condition is to try to settle them, but it is extremely important for the state that they should guide settlement upon lands where the settlers can have some hopes of being fairly successful, and it is not fair to take a man and put him on a tract where it is almost impossible for him to succeed. Now, there is good sand and poor sand, but where those sandy lands have been burned over repeatedly, time after time, there is very little if any fertility left in the soil. Such lands should be permanently held under forest and replanted and the sooner replanted the better it will be for everybody concerned.

This picture shows you how a tract has been left after it has been lumbered under forestry regulations. The definition of forestry is conservative lumbering, it is lumbering the tract so that you will have successive crops of timber and the forester comes in and takes out the mature timber, he harvests the crop that is ready to be harvested and leaves the young tree growth. You see the young growth has been left in good condition and here is the slash pile cut and ready to be burned. That was done by a company under the direction of the government.

In many cases, due to contracts or for other reasons, we can not oblige such a large amount of timber to be left, and as you know, if they were allowed to do so, most men in cutting would take everything. This is a picture taken on one of the Indian reservations in Wisconsin. The State Board of Forestry is cooperating with the Forestry Department in Washington to see that there will be some forests left in the future, in other words, to stop the slaughter of timber and the terrible fires. Those contracts were signed years ago, we can not oblige them to leave much timber, but we can oblige them to leave seed trees, so we go in and mark the trees which shall be left and in the foreground you can see the slash pile to be burned, making it impossible for those terrible fires to go through.

Wisconsin would have passed such a law many times if the lumbermen had not defeated such laws in the legislature—I am not blaming the lumbermen for everything, possibly business conditions demanded it to a large extent, but they often blame the state for not having enforced the rules, but the lumbermen came to Madison and to St. Paul and they defeated those bills in the legislature, but if they had been compelled to burn their slash, the fires which swept over the forests would have been impossible and the trees which were left would have seeded the ground.



"The desert which is left for the homemaker." Lumbered and burned over.

Here is a case of natural reproduction, thousands and thousands of young pine coming up. You have heard the statement that pine will not follow pine, that is absurd, pine will always follow pine if we do not let a fire in and destroy everything.

This picture was taken in the Black Hills, South Dakota, and you see the hills covered with young pine; the mature timber had all been destroyed by the mining companies, but back on the hills there were a few large pines left, and they carried seed until as you see, miles and miles of the young pine coming up. The pine cone opens during the heat of the day and may be open one day when the wind is in one direction and may be open again when the wind is in another direction, so that the seed is carried in all directions.

There are large areas which have been so cut and burned over that there is no hope of any natural growth coming up that amounts to anything and consequently we must go in and plant. That is being done very extensively all over the country. This is a view of a large government nursery in Kansas where, as far as man knows, they have never had a forest. They keep the pine in nursery beds until they are two years old and then they are transplanted. This shows you the trees as they are set out, they set them out as a rule twelve hundred to the acre. The cost, everything included, will not exceed \$3.50 to \$5.00 an acre, according to the region and species used, but I am talking of white pine and Norway pine, it appeals strongly to the government, because they are looking far into the future.

This is a plantation of white pine owned by an individual in Massachusetts. The white pine in Massachusetts is very valuable and the pine they are cutting is about this size and it is all going into box boards, they find it extremely profitable.

A feature of forest reserves that I have not spoken of at all is the great outdoor place that it will be for the people, not only of this state, but of the whole Mississippi valley. I told you that in the Adirondack region of New York they have a million and a half acres and as it is extremely popular the people of New York City go there for the summer, camping, fishing and hunting. They have hotels and boarding houses in the Adirondack region, 29,000 I think the figure is, and in 1905 193,000 people went there for pleasure and recreation. The receipts in New Hampshire one year from the summer tourist business were over \$10,000,000. In Northern Wisconsin we have a lake region which is second, I do not think, to any in this country. We have in three or four counties in the northern part of the state over 1,200 lakes, magnificent lakes, and one great feature

of the forest movement will be to protect those beautiful lakes so that people can go to that region for rest and recreation.

This shows you what Minnesota is doing. You all know how desolate a lake is around which the timber has been felled, where the tops are lying and dead timber all around the edge, and so Minnesota is trying to keep at least a fringe of timber all around the lakes and we shall try to do the same thing in Northern Wisconsin. Where we have not money to buy land around the lakes, we can at least negotiate with the lumber companies to leave a fringe of timber.

These last two slides that I showed you I wish to say something on as to the matter of forestry applied to farm wood lots. The farmers of the country have only lately begun to realize how important a part of the farm the wood lot is, how much it means to them to handle their wood lot carefully, especially in the last few years when the rise in stumpage prices has been so rapid and extraordinary. Many men do not seem to stop to realize that a good tree takes up no more room in a wood lot than a poor one and the first thing they usually do, instead of going in and cutting out the dead and dying trees and then the crooked trees, they take out some of the live trees. The wood lot should be left in the very best growing condition, to make it produce as much as possible, just as you do any other crop. Here, for instance, is a wood lot that we managed in the northern part of New York state and the farmer that owned it wanted to reproduce to chestnut, so we left the large chestnut to reproduce and brought the whole wood lot into what we call an even aged condition, we cut down so that we get trees about the same size, or as near the same as we can, then they will all close up, and you will get a stand of trees similar to what we see in Germany. The question of wood lots in Northern Wisconsin to a farmer is important, because, as you appreciate, the farmers of Northern Wisconsin are in many cases quite as much lumbermen as they are farmers. I referred to the matter of forest fires a little while ago, my assistant has just been out attending the Farmers' Institutes, and he tells me one of the things that the farmers were most interested in was just that question of forest fires and he said it led to very heated discussions in many cases.

In the State Board of Forestry we have the appointment of fire wardens all over the state. In any town where we think it important we appoint fire wardens who serve only in their own towns, get no salary, are only paid for the time during which they post notices and fight fire and are paid by the town in which they are appointed. They send in reports after each



Grown in the open and so limby and of little value.

fire and also an annual report, giving the number of fires and telling what the causes were. In the last three years we have compiled all those figures and we find that from 68 to 76 per cent. of all the fires in this state were caused by settlers burning brush and clearing land, report after report would come in, reporting so many acres, sometimes a thousand acres burned over, no damage done, young growth, that was all. Largely through the increased value of timber the last few years, the farmers have begun to realize that there is some damage to them from the loss of that young growth, that it is extremely important, and consequently in these Farmers' Institutes any farmers that were known to be careless about fires were held up and given a good rating, because that of course is a thing which should be punished very severely, that is, where a man is needlessly careless about burning brush and burning slash and letting the fire get away from him.

That slide shows you what that wood lot looked like a few years after the big timber had been cut out. You see it is beginning to close up, in other words, we are getting it into an even aged condition. You see that more strikingly shown in this picture; all the trees are of a more or less uniform size and consequently you will get clearer timber, the timber makes a greater yield and greater returns on the capital.

You will often hear people say that the cut over and burned land is of no value, that it is simply a stand of poplar and aspen. You will find in many cases that pine is springing up within them. In this picture it shows a number of young pine trees showing up between poplar. This represents the character of many wood lots. In the first place, the timber is grown in the open, consequently nothing but limbs, limbs mean knots, and inferior lumber. The grass is growing all through that wood lot and therefore the farmer is strongly tempted to graze his cattle, and, gentlemen, you cannot have a good wood lot and graze cattle at the same time. At least you must exclude your cattle until the trees are above the height of cattle but if you want to get the greatest returns from your wood lot you must absolutely exclude all cattle.

Here is a case of another wood lot. You can see a large amount of young growth, but through the forest are big, mature trees. A tree which has reached this size is mature anyway, the growth has come to be so slow that it is not yielding a return on the capital such as it ought to. You can figure that out with any growth of timber, you can find out when the rate of growth has culminated and the time you ought to cut. When

you leave a tree of that size it is suppressing and keeping back the growth of ten to twelve others.

This shows a point which the farmers are beginning to appreciate, the enormous damage that is done by surface fires. This shows the effect of a surface fire that has burned through the wood lot and destroyed all the humus, taken away the fertility which it has taken one hundred years to put there and it has just burned enough to kill all those trees and the consequence is that the whole wood lot must be cut or else it will blow down and simply lie on the ground, an enormous mass of timber waiting for successive fires.

This is the sort of thing that makes a forester heartsick. That is where on a wood lot there is a fine young growth that has started up and then a surface fire from some adjoining land where a slash is left burns all that young growth which perhaps it has taken ten to fifteen years to establish, and when you burn timber of that sort you have nothing left to produce seed and when that is gone there is nothing left except to go in and plant artificially.

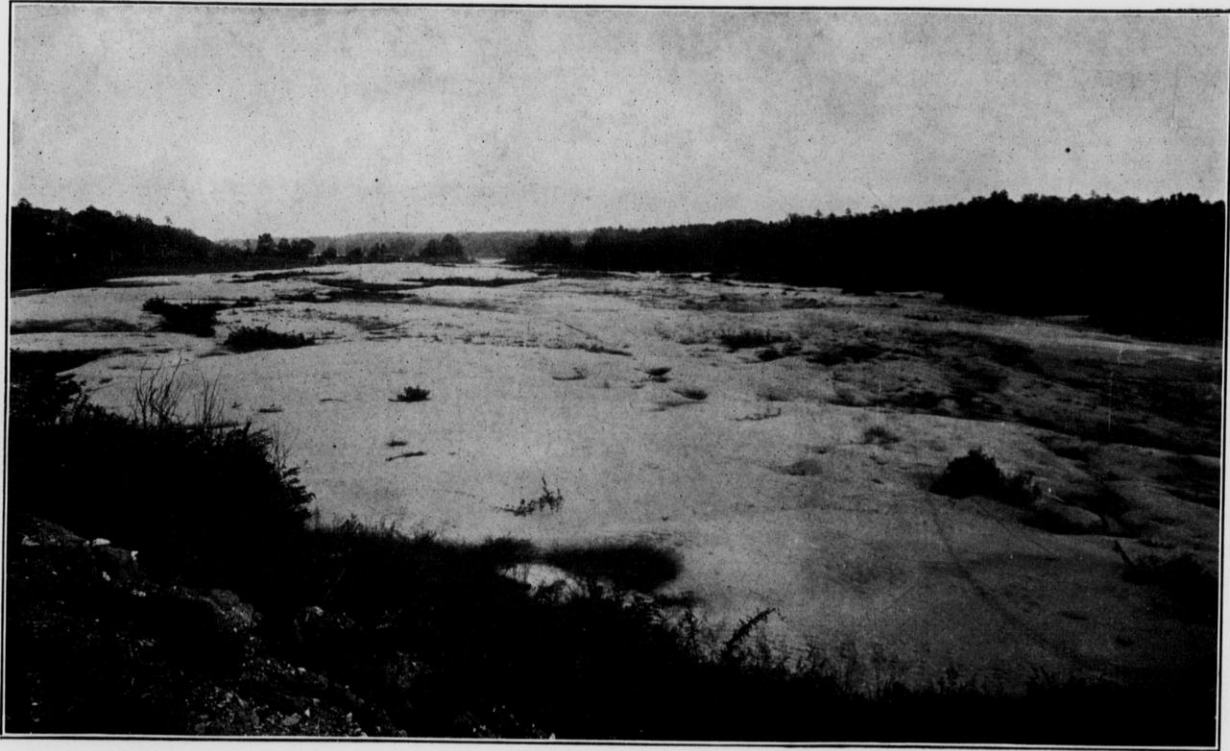
Here you see what the Agricultural Department tells me has occurred over a million acres in this state along the Mississippi river, that is where land has been so washed and gullied that it has been rendered unfit for cultivation. I heard a gentleman make a statement yesterday that struck me as very true, he said the counties along the Mississippi were paying greater taxes to the Mississippi than they were to the state, and county, and I believe that is true, in the large amount of soil that is washed in annually.

The result of such cutting of the steep slopes and erosion is sure to be seen on the lower reaches of the river. Here you see a river which has begun to overflow its banks and cover agricultural land with silt.

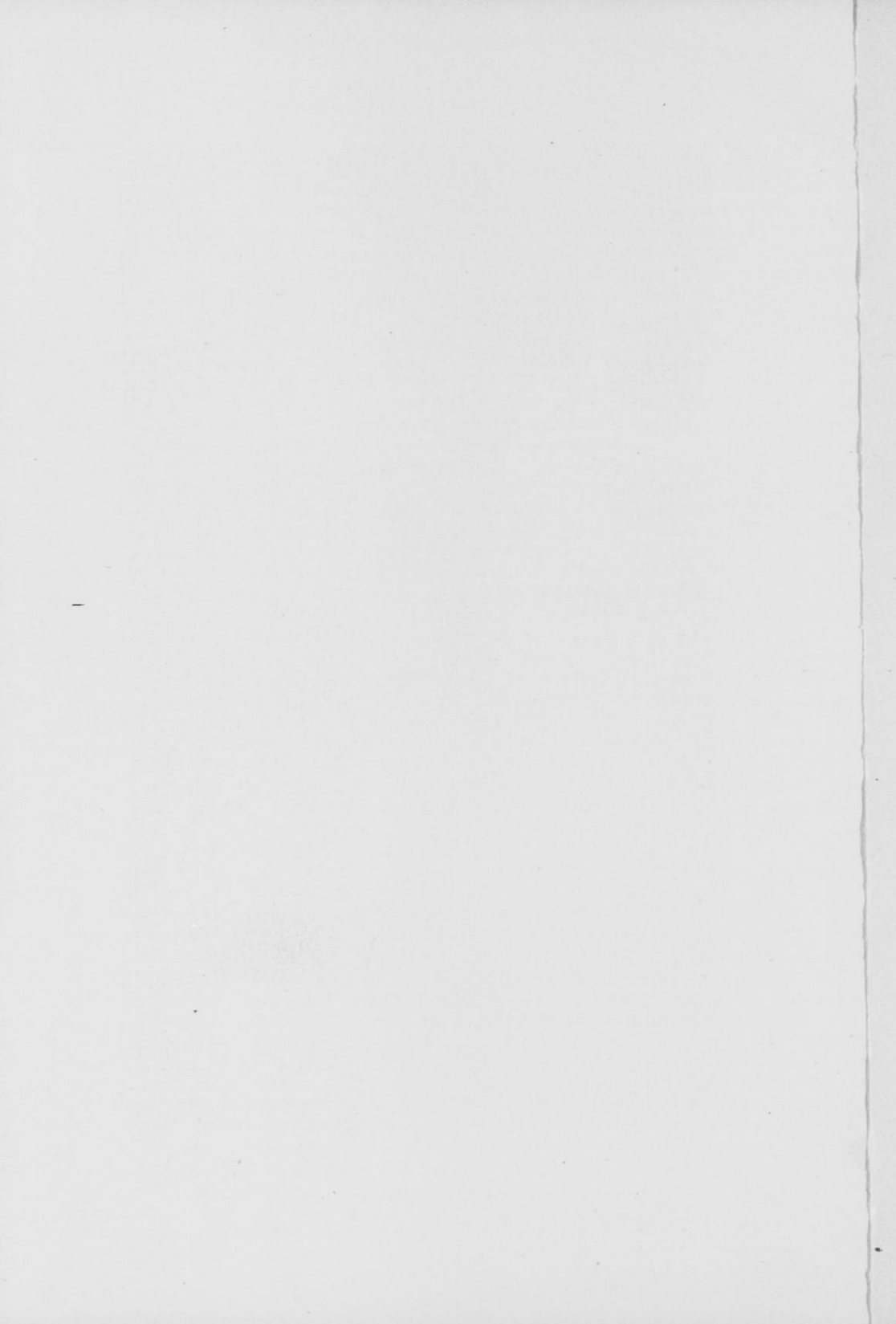
And here we have where that river after a year or two more of cuttings is leaving its banks more and more and is covering acres and acres and rendering land unfit for cultivation.

Here you see agricultural land entirely buried under sand. After a big snow on the headwaters, heavy rains coming on, the snow has been melting very rapidly in the early spring, it comes down with a rush, all the sand is washed into the river, the river leaves its banks and creates this tremendous damage all over the country.

Those pictures I showed you were taken in North Carolina, where cutting has been going on very heavily and where you may have noticed congress is now asked to purchase a large



Sand deposited on agricultural land by spring floods.



forest reserve in the Appalachian mountains. On account of the erosion the farmers are driven to cultivate on terraces so as to avoid erosion.

The following views I will show you are from China and you will see erosion carried to the extreme extent. Here you see the native pine similar to our *pinus ponderosa* which formerly grew all over China; now the forests of Northern China have been absolutely destroyed and you will see the results in the slides. This picture I put in to show the extremes to which Chinamen are driven on account of scarcity of timber. As you know, in China it is considered absolutely important that one's relatives, especially one's parents, be given as fine a burial as the funds of the family will permit, and they believe that they must always bury them in a good, substantial coffin. These men have gone a three-days' march way up into the mountains to find trees large enough from which they could whipsaw boards large enough to make coffins and they are now carrying them on their backs.

Here is a view which shows you more clearly what I have been talking about. This is a bed of a river rising in the mountains which has been stripped of all its timber. This view is taken in the summer months and you can see the bed of the river is absolutely dry, but you notice the high banks and you see the large rocks deposited, which will give you an idea of the terrible freshets which come down in the early months,

This shows you a scene in the foothills stripped of their forests; here is the valley of the river, just now a dry bed and the Chinese towns have a wall thirty to forty feet high to keep out the spring floods.

The Chinamen make the best of a very bad situation. This view is also taken in the bed of the river. He knows that the terrible freshet coming down in the spring is bringing all the best soil from the up-country and a great deal of that will settle there and consequently he takes rocks and builds little compounds which will hold that mud and when it settles down he has a little soil to cultivate during the coming summer.

The Chinamen are driven to what the Southern farmers are doing; they are building terraces on some of the land to cultivate on. They will go down into the valleys where they have a deep well sunken and they will carry up the water in two pails on a yoke and they will put it on with a dipper. That is common all over China and India, and I was tremendously impressed with the fact that the terrible famines of China and India are properly attributed to the destruction of the forest, because, as you know they are both agricultural countries with

an enormous territory dependent to a great extent upon irrigation and when the forests have been destroyed there is no water in the streams in the summer months when they need it more directly.

Mr. Griffith then spoke in behalf of the movement of setting aside the region around Devil's Lake for a state park and forest reserve.

A PROSE POEM OF THE FOREST.

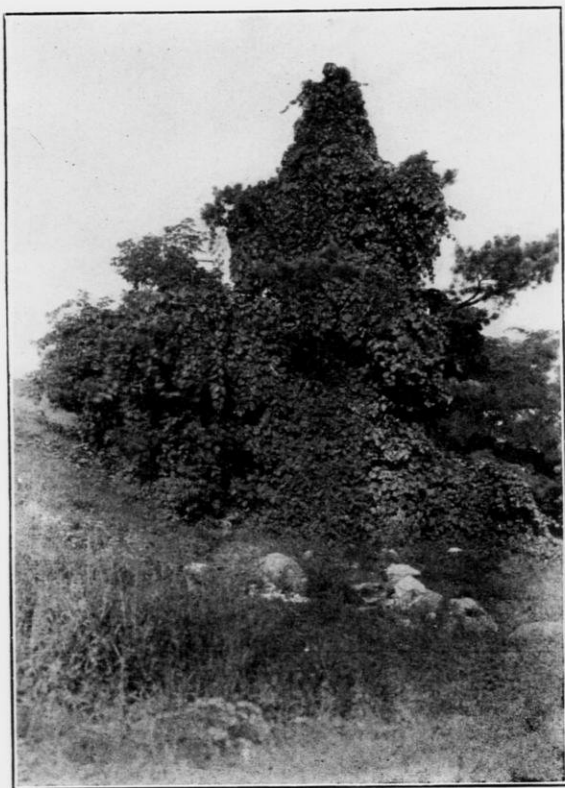
ALLETTA F. DEAN, Ph. M.

A twilight hour—

A cloudless sky of opal tints, pink and green and blue; against it the lofty pines slowly and majestically swaying in the gentle western wind. Here below, the sun is set, and yet up there a hundred feet and more, its light surrounds the tree-tops with a dim and tender halo. In its rays the Norway pines show faintly yellow; the white pines richer, deeper red. Near by, a spruce, not aspiring so high, makes delicate faint tracery against the tender brightness; the cedars, lower yet, dark and solid in the twilight, fill in the backgrounds.

These lovely pines! These great, grand, glorious pines! With ever-changing expression each more beautiful than the last. Their shafts rise clear, clean, tapering, to the lowest branches, which are forty, fifty, even sixty feet from the ground; those branches clothed with soft feathery needles. The Norways are somewhat stiff and angular in branch and leaf, but the beauty of the mast-like trunk in its red-brown covering compensates for the angular top. Norway or white pine, the fitting crowns are the clusters of cones that, so far up, look like great amber beads.

You should see these trees at midnight when the full moon silvers them with its white radiance. You should see them at early morn after a night of "frost shower," when the feathery snow has fallen so gently upon them from the cloudless sky, that not a flake has lost its bal-



Wild grape strangling a Scotch pine,
University grounds, Madison.



Young white pine coming up on burned-over land.
Illustrating "Forestry," by E. M. Griffith.

ance, but lies lightly in little soft fleecy balls and mounds on every twig and cone.

And he whose ear is attuned, can catch the music of these woods even when no breath of air seems stirring. That low murmur seems like the sound of quiet waves upon a sheltered shore. Now comes a breath of wind; you hear the waves rush fiercely up the sands. The wind increases. Once more look at the trees. Great giants they are now, chained down to earth. They strive to break their bonds, and as they struggle, groan and cry aloud!

Another twilight hour—

The massive clouds have all day long obscured the sun; the dense and somber grayness has never for a moment yielded. Now comes the sunset hour, and suddenly yonder loftiest pine is tipped with vivid crimson. All else bears the deep gloom of twilight and dark clouds. Soon a lower top catches the color—and then one after another the tops of all the tallest trees blaze forth in crimson glory. What is it? Are the spirits of the woods dipping their great torches in the sun's sacred flame and holding them aloft? No earthly fire could so color them. Look toward the west—screened from us by the dense cloud mass no light do we see, no sign of the glory reflected so far above. Rise! Rise! We are too near the earth! Only from the heights can the source of that glory be seen!

Oh! the futility of words! Nature opens to us her glories, then strikes us dumb that we may not tell.

No poet could interpret, no artist could picture the beauty of the soul of these woods.

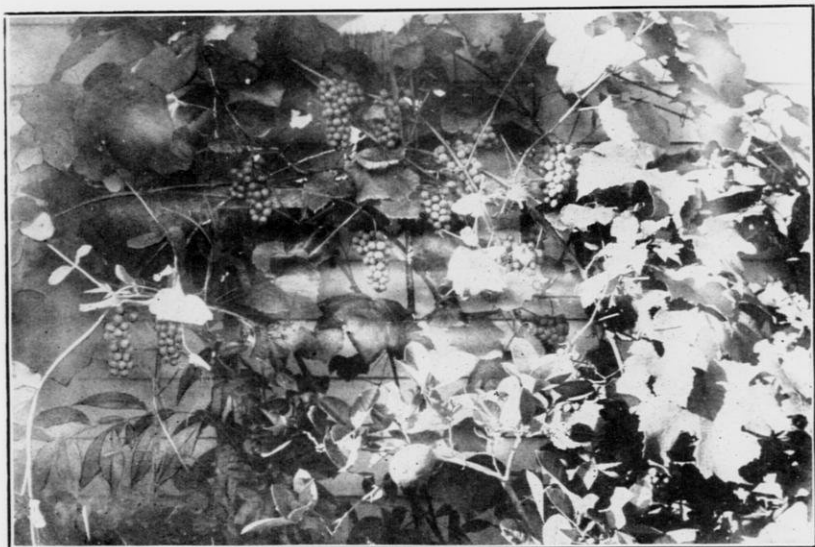
SOME THINGS ABOUT GRAPES.

C. H. TRUE, Edgewood, Iowa.

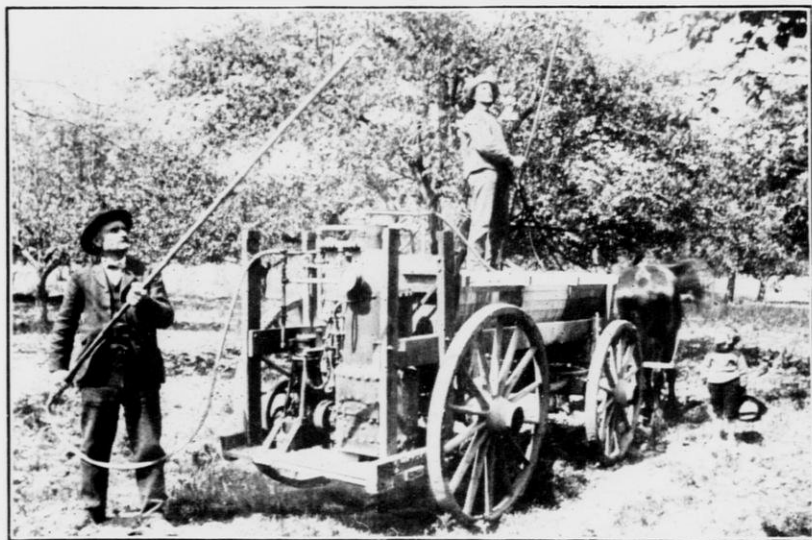
Fortunately my topic does not require me to tell all about grapes, but simply some things. Neither does it confine me to any particular phase of the question to be considered; not-

withstanding I should like to treat the subject in a way that will prove most beneficial to those interested. Doubtless I should not have been invited to present this subject before your society had not your secretary considered the matter of grape culture one of special importance to the fruit growers and fruit lovers of your favored state.

Of the very many things that might be said I wish only to speak of a few of the really essential things pertaining to the culture of the wonderful vine whose most wholesome products have blessed all ages of the home and family and whose rich green foliage and clusters of luscious fruit doubtless adorned and beautified the paradise home of the first man, and whose fragrant aroma perfumed the air of the rich valley of Eschol in the long years ago. In his correspondence Mr. Cranefield suggested that you might not be especially particular about the exact cultural directions but rather most likely would like to know something about the practicability of growing grapes in Wisconsin, and also what varieties would be likely to succeed best, together with the nature of soil and site best adapted to its successful cultivation, with named varieties for family uses and commercial purposes, and so in writing this article I have endeavored to make these things most prominent. While not fully acquainted with the general nature of the soils of your state I can think of no reason why some of our grapes should not be successfully and most profitably grown in many if not all parts of Wisconsin. I think there are few plants that more readily adapt themselves to the varied conditions and soils than does the common grape vine, and yet of course there are certain conditions that prove especially favorable to its growth and fruitfulness, this also being true with all other plants and trees. More than twenty-five years ago I had very good success in growing grapes on the deep black corn lands of west central Illinois, and have also met with equally good results on the heavy yellow clay soils of northern Iowa's rolling hills and we do know that some of the finest grapes grown in the grape belts of Michigan and western New York are produced upon soils that are made up principally of sand. An Ohio grape grower informed me that his choicest grapes were grown in heavy yellow clay land that had received little or no fertilizing element for years. On such a soil as would scarcely yield a paying crop of anything else at McGregor, Iowa, on the western terraced bluffs of the Mississippi, Mr. A. F. Hoper, a veteran vineyardist, once grew as fine specimens of many varieties of grapes as I have ever seen produced under any conditions. At the Minnesota State Horticultural Society convention in December we witnessed a fine dis-



Niagara grape planted two years, showing crop in 1906. Antigo, Wis.



Spraying outfit of Edw. Hutchins, Fennville, Mich.

play of perhaps more than half a dozen different sorts of grapes as gathered from the vines fresh and in a good state of preservation and having been grown as I believe by some Minnesota horticulturist; and thus we see over what a wide territory and diversified soils the vine flourishes. In view of which fact were I a resident of almost any part of southern Wisconsin, to say the least, I should not hesitate to plant for home uses or extensively for commercial purposes a number of our best known and well tried grapes with the assurance that it would prove a safe venture. I may speak of one condition under which the cultivation of grapes will not prove profitable and that is on a continuously wet, cold or seepy soil. On the other hand on account of its long deep penetrating roots it will withstand droughty conditions to a greater degree and still thrive than almost any other plant. The finest and sweetest grapes I ever grew were produced the memorable year of 1899 while the growth of the vine was not as much as in other seasons, the maturity and ripening of the fruit was most perfect. While the grapes will thrive and fruit heavily on moderately rich soils, should they contain an excess of nitrogenous matter, mildew and scab is likely to appear and for this reason the liberal use of fresh barn yard manures in the vineyard should be avoided. Unleached wood ashes are highly beneficial especially on all gravelly or sandy soils and with lime added on deep loamy soils that may be lacking in the element of potash with a tendency to become soured. Perhaps clay soils are least benefited by the use of ashes since they usually contain a liberal supply of potash. The most favorable location for the vineyard is where a free circulation of air can be had and where the sunlight will reach the vines during the greater part of the day for heat and perfect air circulation are very essential requisites in successful grape culture and for these reasons a gradual or even quite steep slope to the south or southeast should be chosen yet at the same time I have known vines to do almost equally as well on a level tract or on our high ridge lands as on a southern exposure with the exception that the fruit is a little later in ripening. If I could not be accommodated with the most favorable site rather than to be without the luscious fruit I should plant some of our earliest and hardiest sorts even on a western or northern hillside with the conscious assurance that I would not meet with failure.

The thrift and fruitfulness of the vine will depend much upon how it is trellised and pruned, while we must also consider that there is one plot of land devoted to fruit raising that needs perfect cultivation and freedom from grass and all weeds more

than any other. It is that portion that is assigned to the vineyard. While my first lessons in grape growing were taken from an experienced fruitman from York state who trained each hill to a single stake and practiced very low pruning thus forcing the fruit to grow and ripen close to the ground, my own experience proves that throughout this northwestern country that the three wire trellis system is far preferable to the former method. In constructing the trellis, good durable posts seven feet long should be used, being set at least two feet in the ground and not more than two rods apart in the row, the end post being securely braced. Galvanized wire should always be used—about the No. 18 in size—and the bottom wire should be stapled 20 or 24 inches above ground, the top wire being two inches below the top of the post and dividing the distance between these two for the middle wire.

In the very important matter of pruning the vine is where many and especially the amateur fails, yet when the proper method is once fairly understood nothing is easier or more rapidly accomplished. Vines are frequently set too closely and the very common mistake made in cutting away too much of the fruiting wood. I have found that a majority of farmers and city residents who in a way have endeavored to produce sufficient grapes for home consumption have not learned that grapes do not grow on two year old wood and who in their indiscriminate pruning, if they prune at all, only succeed in cutting away a large share of the fruiting wood. While for a series of years I have met with good success in the production of paying crops of grapes not a few of my neighbors who possess equally as favorable location and soils and even with the closest instructions often make a failure in their attempt to grow grapes and this emphasizes the fact that the matter of successful grape culture is largely in the hands of the cultivator whatever may be the nature of the soil and other minor conditions. In regard to desirable varieties I may say that with the experience of years with many of the leading sorts I can safely select for my own location a few of the very best and they are few indeed and yet abundantly sufficient to meet all our needs. Grapes, as is also true of all other kinds of fruit, may be classed as good, better, best. As for me I have use only for the best. Generally speaking those which are best for the distant consumer are also equally good for our own families and in our own homes. Making of course the usual exception in individual tastes. While the Concord has for many years past and is still the standard commercial grape of our Michigan, Ohio and Western New York growers, and while for a series of years I

also regarded it as being the best among many and grew it almost exclusively, I have now nearly dispensed with it except to retain a few vines for the sole purpose of prolonging the season and yet I regard the Concord grape as being an excellent sort wherever it will come to perfect maturity, but I have found that in northern Iowa we have occasional unfavorable seasons when its fruit will not ripen perfectly and much of it is rendered unsalable except for culinary uses. Moore's Early and Worden are the two principle sorts grown on my own grounds. The former will ripen about ten days earlier than Concord, will sell for about double the price of the latter, appears to be equally as hardy in vine, and is less subject to mildew and scab. As I have grown it the berries are a little larger and the clusters more compact than the old standard sort above mentioned while the quality of the fruit when well ripened is decidedly good for all purposes.

The Worden follows in season of ripening being a few days earlier than the Concord but like its parent it is somewhat subject to skin bursting as the skin of the Worden is especially thin and tender and is also somewhat subject in unfavorable seasons to mildew and scab, but after all it is one of the very best varieties for family uses. For a succession of fruit for garden culture I feel that I can safely recommend the three varieties I have referred to in the following proportion: three Moore's Early, two Worden and one Concord.

I have not found a variety of red or white grapes that has proved profitable for commercial purposes while a few people appreciate as a change some distinct flavored sort such as Agawam, Moore's Diamond, Delaware or Brighton (which I prefer to all red varieties) yet the popular taste calls for a black grape for a continuous supply both for the table and for culinary uses. All things considered and for various reasons before stated if I was to be confined to a single variety for general purposes that one would be without question Moore's Early, it being understood that I am making this choice for my own locality but do not with any certainty recommend any distinct variety as being fully adapted to all parts of Wisconsin or other states and yet I feel that I can with much confidence recommend Moore's Early and Worden as the two varieties possessing the highest qualities and as giving the greatest promise of success of all varieties with which I have had experience and I believe that no one should hesitate to plant either or both of these freely in almost any part of central or southern Wisconsin. It might be a matter of interest to some for me to state that my own vines during the past year produced on an average of 32

pounds of fruit to the vine, the average returns per vine being about 55 cents. Now I have covered but a small portion of the ground suggested by my subject but I feel confident that what may be lacking in the matter of information and interest in the paper will appear and be made plain in the discussions that may follow it.

DISCUSSION.

Mr. Smith: I would like to ask about the Janesville grape, what your experience is with that.

Mr. True: I have never grown it.

Mr. Kellogg: What do you do for the mildew and scab which you spoke of?

Mr. True: I have never been seriously troubled with mildew and scab until a year ago last summer, then more than one half of my crop was destroyed. A few other seasons previous to that I had a slight attack. I never had sprayed my vines or used any other method to work against these diseases. Last year I made up my mind to know whether there was any virtue in spraying for mildew and scab. I have a spraying apparatus, what is called the Barrel pump spray and after I had my vines up on the trellis and before the buds opened I went over the whole vineyard and gave them a thorough spraying with the liquid Bordeaux mixture. After that I also used the dust spray. I had a dust spray apparatus and after the blossoms came out I went very early in the morning with the dust spray, I think I went over them with the dust spray about four times a season. I found that with the dust spray in an hour or two hours I could go over a great many vines. I had to get up at about four o'clock and go over the vines while the dew was on, or mist. I do not know that possibly my grapes this year might have been free from mildew and scab if I had not sprayed, but I will say this, that when I came to gather my fruit I could not detect a particle of mildew on any, except a little on the Moore's Diamond, and nicer grapes I never grew. Whether it was on account of the spraying or not, I do not know, but I never shall pass another season without spraying.

Mr. Smith: How many branches do you leave to a vine?

Mr. True: I have my rows about ten feet apart and I leave two canes, letting one cane run on one vine in one direction and another in another direction. On the Worden and Concord I use

three buds, the Concord is not quite as heavy a bearer. I prune my Moore's Early to four or five buds and if you prune Moore's Early, take, say five buds, I think you will obtain as many vines to the bud as you will on the Worden and Concord.

Mr. Smith: Have you done summer pruning?

Mr. True: Yes, I have done summer pruning somewhat, just enough to get the new growth of the vines out of my way for cultivation and in connection with that I would say this year I tried a little experiment on a few vines just to see what the result would be of cutting back very closely to see if it would not hasten the ripening of the fruit and I found it was rather bad practice, it rather retards ripening than hastens it. I girdled a few vines to see what effect that would have and I find you can increase the earliness of the ripening of the Concord fruit from four to five days to a week by girdling the vine when the grape is fully grown and before it begins to color.

Mr. Turner: I would like to ask if you recommend the dust spray in grape culture?

Mr. True: I have faith enough in the dust spray to use it myself, this has been the first year. I also used it in my apple orchard extensively. I think there is a great deal of virtue in the dust spray, but I think it requires more applications than the liquid spray to obtain the same results. But I do like the dust spray, especially in spraying grape vines that are low down and you can get over a great deal of ground. I cannot see why the Bordeaux mixture applied in the dust form upon the moist surface, when that becomes dissolved in dew along the leaves and branches of the vine, why it is not as good as the liquid spray. I know it is much more easy to apply, as it comes mixed.

Mr. Turner: Would that be practical in commercial orchards with large trees?

Mr. True: I think it would to quite an extent, it would depend a great deal on the apparatus that you use in putting it on, if you can reach the top of the tree. I can spray into the top of the tree twenty feet high, when there is a slight breeze.

Mr. Reigel: Will you describe the scab so that any one who does not know it may recognize it?

Mr. True: It is simply scab. If you have an injury on the back of the hand and the scab forms there, you know what it is, you call it a scab. Now, it is somewhat similar to the spots that you will see on the grape after the scab has struck it. The scab will sometimes appear on the young growth of the vine, on the leaves or wood of the new growth, but the greatest injury is done, it seems to me, by the spore, which is a very small spot

at first, but it increases in size until in some cases it covers nearly one-half of the fruit. It is a dark, scabby crust that forms over and renders it unsalable.

Mr. Reigel: There was something the matter with my grapes this year and slightly last year. I noticed upon the young foliage that the little ribs that pass from the center would be attacked by some disease that would make the leaves curl and the tender portions of the vines would have black spots on them.

Mr. True: Mildew will have that effect. I am somewhat inclined to think that the condition that you describe appearing on your grape vine is what we call the anthracnose on the raspberry, but it may not be the same.

Mr. Smith: Have you ever used bone dust on your grapes?

Mr. True: I have not, I have used wood ashes a great deal.

Mr. Hutchins: At what time does the scab makes its appearance?

Mr. True: It varies and its appearance is governed largely by the condition of the weather. In a cold and wet season the mildew and scab will be more prevalent than in a dry, warm season if you have the right conditions. From the time the grapes are set until they are half grown, the scab will appear, it is owing quite a little to the condition of the weather.

Mr. Bryant: I think it ought to be stated in this connection that our spraying measures are simply preventive and not curative. You do not wait until you have the scab and mildew before you apply the remedy, it should be put on as a sort of insurance.

Mr. True: I am glad Mr. Bryant spoke of that. I will tell you, the secret both in the orchard and the vineyard for the prevention of scab and mildew and fungous disease is, as Prof. Beach said, in getting the preventive there before the disease makes its appearance. You must spray early, even before the leaves have opened if you want to get ahead of these fungous diseases and mildew. It is very essential that you should spray early.

Mr. M. S. Kellogg: I understand Mr. True to advocate the applying of spray on orchard and garden crops before the foliage starts at all; that is for a commercial man, but for the farmer, is it necessary for him to spray before it starts?

Mr. True: I think it is, to get ahead of the fungus. I think we should spray if we do not expect any crop of fruit even, I think we should spray our young orchards and do all that we can to prevent the disease from getting there.

A Member: Will the anthracnose spread from raspberries to grapes if they are planted side by side?

Mr. True: I could not answer that question, I presume Prof. Hansen can.

Prof. Hansen: I do not think they have anything to do with each other, as far as I have heard.

Mr. Toole: The Delaware, the Brighton, the Green Mountain and Moore's Diamond, would not you recommend to amateurs to try them, or is there too much disappointment following those?

Mr. True: In a small way, yes. As I stated, I regard the Brighton among the best of the grapes of that character. I do not fancy Moore's Diamond, it does not please my taste. I had a great many customers in my town for it, at least I sold nearly all my grapes in the vineyard and it was a common expression "Moore's Early is the best grape you have for customers." I like to grow different vines, there is a difference in taste, but you will find as a general thing that the customer calls for the very best black grapes and that is what will go best in the market.

Mr. G. J. Kellogg: What is the latest keeper that you have?

Mr. True: I have not tried to keep grapes very long, I have kept some in the cellar until Christmas time wrapped in a layer of cotton. I have not tried any other method of keeping them.

Geo. J. Kellogg: Grapes were an excellent crop in 1906. I have about twenty five vines in my garden at Lake Mills. The summer of 1905 they were nearly killed with mildew. I did not spray until too late to check it.

In 1906 I commenced spraying with blue vitrol water before the buds opened, using this on both vines and all trees. After the buds opened I added the lime and continued spraying every two weeks until the grapes were nearly grown. Some of the bunches showed traces of the Bordeaux at picking time.

One especial advantage in spraying before the buds start is dispensing with the lime which always clogs the spray more or less.

The strawberries should be sprayed twice before blossoming and three times after with Bordeaux.

FRUIT MARKETING SESSION.

SOME PROBLEMS IN CO-OPERATIVE FRUIT MARKETING.

CO-OPERATIVE MARKETING OF FRUITS.

E. A. RICHARDSON,

Manager Sparta Fruit Growers & Shippers' Ass'n, Sparta, Wis.

The marketing of our fruits is a subject of vital importance to every horticulturist, whether he raises a few square rods of strawberries to supply the demands of his local market, or whether he has twenty, forty, or even more acres devoted to the production of the different kinds of fruit which will be placed on a more extended market thereby coming in competition with that shipped from other places. The failure of co-operative associations in the past has raised the question in the minds of many whether it was advisable to market their produce through co-operation, or each grower attend to the marketing of his own products; for unless you are able to thoroughly convince a grower that it is to his interest, and that he will be materially benefited by such co-operation, you surely cannot blame him for wishing to have immediate supervision over the financial end of his own business.

In tracing the cause of these failures, we invariably find either a lack of good sound business principles, too much leniency or liberty given the grower, or a management which did not have the confidence of its members as well as the confidence of the parties who were to handle their fruit.

The advantages to be derived by co-operation in reaching distant markets, securing minimum freight and express rates, and getting a larger and better distribution of our products, are so

great and appeals so directly to the profit and loss side of the question, that no person who has studied them can fail to see that it is to his interests to join with his neighbor and take advantage of the conditions as they find them, thereby making his account at the end of the season show a profit where otherwise there would have been a loss.

In organizing an association for the co-operative marketing of fruits, each association will be obliged to enact by-laws and rules, which would appear to be essential for the best handling of the products in their locality, and to attain the aim for which the association was organized.

The plan of our association at Sparta is absolute co-operation. Each grower belonging to the association delivers his fruit to the manager, taking a receipt therefor, and the fruit is then either sold on the open market, shipped out on standing orders to local dealers throughout the country, or consigned to some responsible commission house, as the manager in his judgment thinks best, and returns made to the growers on each days shipment, pro rata according to grade. By this method our manager can avoid overstocking any one market so far as shipments from this one place. He can readily keep in touch with all the principal markets and by a little judicious advertising can let it be known that dealers may send in their orders with an assurance that they will be promptly filled with good fresh fruit. This has enabled us to obtain a price for our produce which the individual cannot get.

We have further advantage in the fact that we have a man who devotes his whole time looking up the market, receiving quotations from the different cities, and who is conversant with the conditions from day to day and thereby enabled to profit by any change that may occur in any market which we may be shipping to. He can send daily quotations to his regular customers, and above all things, keep in touch with other associations as to their probable shipments, destination, and daily price.

Co-operative marketing enables the grower to devote more of his time in getting his fruit in the best possible condition to put on the market, and invariably raises the standard of quality, a fact which today means many dollars in his pockets, and relieves him of the arduous duty of trying to keep even with the commission man.

Our association was organized in May, 1896, after a large amount of labor performed by five or six of the principal growers, under the most crude, and I believe, the most unsatisfactory constitution and by-laws that any association was ever or-

ganized under. The association as organized at that time gave its members the privilege of selling their fruit on our streets to any buyer who would make them an offer; it further gave them the privilege of saying to what city their fruit should be shipped. The only restriction placed on their shipments was, that when shipping to a city where the association had an agent they were to ship to that agent only, a restriction which did not hinder any other commission man from that city buying and shipping onto the same market—in other words, our association was practically an association in name only. And yet it had its good results, for we were able by this co-operation to make shipments by refrigerator cars, securing a minimum freight rate, and to receive some recognition which is accorded many larger and stronger organizations.

Our present plan of organization has just finished its first year in a most profitable and satisfactory manner, having done a business of over forty-seven thousand dollars, at an expense of only two and one-half per cent to its members, and also having received higher prices for our fruit as a whole than we have been able to get for the last seventeen years, which is as far back as I have any record.

The adoption of a system of grading of strawberries gave us the most thought and worry, as we realized that nearly every person is liable to think that his fruit is as good as his neighbor's, but finally we settled upon three grades, namely, "Choice", "Extra Choice", and "Fancy", with the grade marks of B, A and X. To these we soon found that we had to add one more, which we called "no grade", it being applied to the very small buttony stuff which some growers will persist in putting in to fill up the box. On the start some few of our members questioned the justice of some of our grading, but after changing graders once or twice, when a question as to grade was raised a comparison of the two grades placed side by side was sufficient to satisfy the most skeptical as to the grade which his stock belonged to. We did not establish a system of grading for raspberries and blackberries the past season, but I am of the opinion that it would be advisable to do so.

One of the most serious problems was to get some of the growers to deliver their fruit early enough in the afternoon so that we might be able to get it on the first outgoing train, thereby reaching some of the farthest and best markets throughout the Dakotas the following morning. These are a few of the problems we have had to solve this past season, and we found that conditions would confront us from day to day which would tax the ingenuity of the manager to its utmost to settle in a

manner satisfactory to all, but with the hearty co-operation of the president, directors, and in fact nearly all of our one hundred forty odd members, we have been able to demonstrate to our satisfaction, that without co-operation the majority of us would be at the mercy of the man at the other end of the line, and consequently would have to engage in some other occupation.

As a proof of this statement, I will here say that the members of our association at its annual meeting held on the 2nd day of February, were so well satisfied with co-operation that they took steps to raise their capital stock from one thousand to six thousand dollars, and have already made arrangements for the purchase of a piece of property for office room and a place of business, costing \$3,000, with the intention of manufacturing and furnishing its members with their fruit packages and handling such other produce as our members have to put upon the market.

DISCUSSION.

Mr. Kellogg: How do you grade the fruit after it is received?

Mr. Richardson: Our association went to the railroad company and we got the Chicago, Milwaukee & St. Paul railroad, which is the road that we largely ship our freight over, and we got them to put us up a shed twelve feet wide by 50 feet long, in other words, it was about long enough to take in two car doors. All the fruit shipments are delivered into that place and unloaded onto this platform. We have a grader there that goes through the different loads that come in and grades them according to his estimate.

Mr. Kellogg: You do not sort them at all, just take the appearance of the boxes?

Mr. Richardson: If a person comes in with thirty or forty cases, our grader does not go through every one; in a load of twenty or thirty cases he will take off five or six cases and he grades the load according to the grade that he inspects. In other words, if a grower comes in and says, "Here are so many of my best berries, they will probably grade so-and-so," why, he goes through that pile and if he finds one in there that is inferior, if he finds one case that is inferior to the rest of them, they are all marked poorest grade.

Mr. Daub: What do you call the fundamental principle, or the best principle involved in your co-operation, I mean to say, what do you think is the leading object in co-operation?

Mr. Richardson: I think the objects are so great and numerous that there is no leading object. It is well set forth in the distribution of fruit and bringing up the standard of the fruit, that is, getting the members so that they will put their fruit up in better packages and better shape and we all know that in co-operation and distributing fruit throughout the country that we are not piling fruit into one market.

Mr. Daub: Is it not a fact that the shipping facilities are the life and the body of the co-operation? Is it not a fact that without the shipping facilities obtained through co-operation you would be at sea, that is, you would be an utter failure? Without shipping facilities we cannot handle fruit.

Mr. Richardson: Well, in answering that question, I would say this, that there is not any association that can enhance shipping facilities a great deal only in the way of loading cars. We have shipping facilities through railroads, we have the Northwestern and Milwaukee, and either railroad will do almost anything for us to get us to ship over their road whether we are co-operating or not, but I think that is all right, that is one good point.

Mr. Daub: If I ship individually my berries go in with dead calves, live pigs, mice, any old truck that happens to be in there, that has been my experience and when those berries arrive at the other end, even though they were first class when shipped, they were not in good condition when received. Under the facilities of co-operation, you load yourself, you either ice your car yourself or you have the railroad company ice them and you look to see that they put a proper amount of ice on, not put in half a ton when they should put in three and a half tons, and you load so that your berries will not shake. When your berries are loaded by the common truckman, they are dumped here and there and the dumping is injurious to them and besides that, they are piled up here and perhaps when they arrive at the other end they are all in a heap, you don't know how many times they are tumbled over during the transportation, and that is one of the reasons why we should co-operate. The shipping I think is the most vital point.

Mr. M. S. Kellogg: I would like to ask Mr. Richardson about how many acres their association takes care of in berries?

Mr. Richardson: I do not know that I can tell you the exact number of acres.

Mr. Hanchett: We have 500 acres of strawberries.

Mr. Kellogg: I would like to know how many acres it is necessary to have in order to have an association. The berry growers in our neighborhood do not ship; we have a market there that consumes practically all the berries that are produced in our immediate neighborhood and the question has been discussed among some of the berry growers whether it would be to our advantage to organize a co-operative association and handle berries on the local market. There is no question but what we could get more money if the fruit were graded, but the question is, can we afford to support a man as manager with, say 100, or 60 to 75 acres of strawberries?

Mr. Richardson: I think you could, Mr. Kellogg, for this reason, you could get some party that would attend to that who might be engaged in some other occupation that did not require all of his time. We found in Sparta last year that while we had a great deal of opposition from some of our retail grocery-men there, they were working against us because they thought we were going to put up the prices, there were others that bought all of their goods from us. They would come to our office in the morning and they would say, "Mr. Richardson, I want so many cases of 'A' and so many cases of 'B,'" and they would have a chance then to select just what they wanted for the trade which they had to take care of. Our expenses this year were about \$1,200, something like that, and in answering this question of acreage, I can give you the exact amount that we shipped through the association. Of strawberries, we shipped 16,843 cases; at an average of \$1.35 a crate. That was for sixteen-quart cases, our choice berries. Our grade "B" averaged us \$1.12, a crate, our grade "A", the extra choice, \$1.40, and our "X" grade averaged \$1.53, while the "no" grade I think we had something like 100 cases, averaged us only 70 cents. In the red raspberries, we had 5,610 cases, averaging \$1.53 for twenty-four pints. The black raspberries, 1,666 cases, averaging \$1.49. Blackberries, 8,355 cases, averaging \$1.30; we put all our blackberries up in twenty-four pints. We used to put them altogether in sixteen-quart cases, but I do not think there was a dozen of the sixteen quart crates used in our association last year. We find that they will carry better and the trade seems to like the twenty-four pint crate better than they do the sixteen and we certainly get more out of it.

Mr. C. L. Richardson: Do you lower a man's grade on account of the fruit being picked during a rain, or before the dew is off in the morning?

Mr. Richardson: We make no difference as long as they are all alike. You understand if a man goes out he has to pick

early in the morning. We do not pay any attention to the dew in the morning. Some of them have to come four or five to six miles to town and our main express leaves Sparta from four to half-past four in the afternoon, so you see they have got to get their picking done early in order to get them in. Of course, if the berries are soft, we drop them.

Mr. Menn: What is the farthest distance that some of your members bring the berries?

Mr. Richardson: We have three members that probably bring them about thirteen miles, but we do not care about getting them in, of course we had to take them in starting our organization.

FRUIT MARKETING.

C. H. DAUB, Eau Claire.

I represent the Eau Claire Fruit Growers who were organized in 1902 with a capital stock of \$200; we have not gone into bankruptcy yet, and have a little money on hand. Our method of doing business has been somewhat vague. The first few years we hired a manager to whom we gave almost absolute control. Our method had been soliciting some of the best commission men north and west of us, that is, Duluth, Ashland, Superior and Minneapolis. Duluth is our market and we can compete with any one in Duluth, even with Sparta, at ten cents less a case than anybody else. We can pick our berries any day at Eau Claire up until five o'clock, load them into refrigerator cars and at seven o'clock in the morning the grocery-men in Duluth are ready to take them and offer them for sale. I believe that the method we pursue in shipping is almost ideal, while perhaps not as economical as it might be. We have iced our own cars, not loading them to the minimum, which means only about one half, but we pay the whole freight and in that manner we load them under ideal conditions, they are not jammed and knocked around and they arrive in Duluth in just as good condition as if delivered in Madison by a grower within five to ten miles of the city. We load them ourselves and the commission man takes them out. Last year our crop was small, owing to the plants dying off. (I do not agree with the idea that it was winter killing, I believe it is a disease. My plants that died were almost exclusively new settings and on going over to my neighbors for a distance of five or six miles I found the

same condition prevailing everywhere. Not more than twenty per cent of the entire new setting produced a crop, the old beds apparently surviving. I think there is a disease at the bottom of it and that can be controlled with Bordeaux mixture.) This last year we started out to make a contract with the best commission men. There being some dissatisfaction and the crop being small, we found that we could sell them direct, so they had their representatives come, three or four of them, and they bought most of our best berries and paid us from \$1.00 to \$1.90 for sixteen quart crates right there, but when the poorer berries came in, some of the growers only got about fifty to sixty cents for them and the poorer berry was in the majority, it always is, like the poor man. I believe the gentlemen preceding me advocated very strongly selling one's own product. It is impossible, I believe. The strawberry grower has to pick his berry today and it has to be eaten tomorrow. He has to have an army of men disposing of the crop and the commission man is in a position to take that risk and he does take it. It is beyond the power of the grower to sell his crop. I tried it, I shipped over to the North here and there, now and then, half of my crop, divided it, and I thought I was doing fine; some of the men paid me promptly and some did not pay me at all, and I had the additional care of making out shipping bills and being worried. Averaging it all up, I did not receive any more than I got from the commission men. Besides that, I was very careful to give them the best article I had; I had to, because on the end of my boxes there is printed "Washington Fruit Farm" with a big picture of George Washington, so you know it would not do for me to lie. It worked fine the first year, because I had an A No. 1 crop, but if one has a poor crop, one could not put on the name of George Washington. Well, as I said, the last year has not been as prosperous as I could have wished; we had only a very few berries because they were all killed out. We have shipped as many as 3,000 cases in one day. I think that Eau Claire county is especially adapted for growing strawberries as we have ideal conditions. We have a diversity of soil, and some of the soil is of the very best for producing strawberries, being a sandy loam. We used to think we could not raise strawberries, I used to be one of them, when berries were twenty-five cents a quart at retail. We can raise an A No. 1 berry. I have seen our berries in the market of Duluth two days after they were picked and they were in a fine condition. Of course the commission man said that was not always the case, and I know it is not, for the last two years have been very bad, being a little bit too wet. We do not think we have to ask any odds of the

Sparta people, while they are raising a fine berry, I think it is a little bit inferior to the Eau Claire berry on account of their having a heavier soil than is necessary. The strawberry does not want a heavy soil, it wants a soil that is rather on the light order and I think we have that condition in Eau Claire. I have kept berries in a case and I found that after a day or two I could empty them over on a white paper and shake them up and empty them back and the paper would be unstained. When we have a good crop we sell them freely and sell them cheaply to educate the public taste, and I will defy any one to say that there is a finer fruit or more healthful or a better fruit than the strawberry. The Eau Claire Fruit Growers' Association started in 1902 and has confined itself entirely to the growing and marketing of strawberries and a few raspberries and it has done a fairly good business until the last year, which I think we can call a failure, not so much on account of our method of doing business, but on account of crop failure. I think the commission man is our only salvation, if we deal with an honest party.

ORGANIZATIONS FOR SELLING FRUIT.

J. B. GRAVES,

President Neosho Fruit Growers' Ass'n, Neosho, Mo.

It is coming generally to be believed that it is best for fruit growers to co-operate in selling their fruit. There are exceptions to the general rule. If a man is a capable business man, if he is an intelligent fruit grower, if he thoroughly understands the details of the fruit business, if he understands the best methods and the objects of cultivation, if he understands how successfully to combat insect pests and fungus diseases, if he understands how properly to thin, prune and feed his fruit, if he understands how to gather, grade and pack it, if he understands what kind of packages to use, if he understands what markets to put his fruit into, if he knows how to deal with track buyers and commission merchants, if he has a good reputation in the markets for honesty and the production of fancy fruit, if he knows how to collect his returns promptly and use them advantageously, and if he grows fruit on an extensive scale, then he would do better to ship independently and not to co-

operate with his less intelligent and less skillful neighbors. But such a man is rarely found. Hence the general rule stands true.

The cotton growers of Texas organized to sell their cotton. The grain growers of Oklahoma organized to sell their grain. The truck growers of the south organized to sell their truck. The fruit growers of the far west organized to sell their fruit. All these found it to their advantage to do so. Through their organization they both lowered their shipping expenses and raised the price of their products. Craftsmen and tradesmen of many sorts and kinds have formed themselves into unions and federations of various sorts and names to raise the price of labor, and beyond all question they have raised it. They have raised it so high that a farmer can hardly hire a man at all. Fruit growers cannot afford to be one whit behind the very chiefest of American producers in the matter of concentration and organization. The more complete the organization the more complete the advantage. Down at Neosho, Mo., where my home is, we have an organization of fruit growers that has been fairly successful in its business, and has made a good reputation throughout Missouri and in all the markets where it has done business.

Let me speak of that organization, of its workings and results. I will not ask your pardon for talking about ourselves, for using personal pronouns, for I was invited here by your worthy secretary to do that very thing. If I did not do so, I would not be fulfilling my call. The only excuse I have to offer is, I have a divine call to speak that I do know and to testify that I have seen.

We have an organization of about 140 members. I have the honor at present of being the president of our association. We have been organized about ten years. At that time we had nearly 200 members. Some have died, some have moved away, some have lapsed and some have collapsed. One hundred and forty remain to keep up the battle.

The officers of our society consist of president, vice-president, secretary, treasurer, chaplain and a business committee of five, one of whom is corresponding secretary and business manager. We pay the business manager for his services two per cent of the gross sales of our fruit. Out of this amount he pays his assistant, the bookkeeper, the inspectors at the loading station and all the helpers that are necessary to load the fruit upon the cars. When these are paid there is left the manager about \$1,000, sometimes a little more and sometimes a little less. We prefer paying a commission to paying a salary for three reasons: the

commission has a tendency to stimulate the manager to do his best for the growers, for the more fruit he can sell at a good price the more he will make for himself. In case of a shortage of crops he will fare and fall with the rest of us, and in case of a total failure we will not have to go down into our empty pockets to pay him for the work which he did not do.

We put upon our business committee men of recognized business sense. We select for our manager a man of demonstrated business ability, a man in whom the association has the utmost confidence, both in his competency and his honesty. We believe that it is one thing to grow fruit, and quite another thing to market it successfully. Fruit growing is a science. Fruit selling is a fine art. Fruit growing depends upon definite, fundamental, unchangeable principles. Fruit selling depends upon uncertain, superficial, fluctuating conditions. In fruit growing, one must study climates, soils, locations, variations, planting, cultivation, pests, diseases, remedies, picking, packing, delivering and such things. In fruit selling, one must study men, railroad companies, express companies, refrigeration companies, cities, the conditions of markets, the standing of commission merchants, industrial conditions, distribution of wealth, supply and demand and such things. Fruit growing and fruit selling are two very different classes of business so that a man might be a perfect success in one and a perfect failure in the other. For this reason we select for our business manager a wide awake, thorough, capable business man. He sells the fruit. The rest of us are relieved of that responsibility and we give our undivided attention to its production.

We have a constitution and by-laws by which we are governed. In it are pointed out the duties of the different officers and members. In it is specified who may become members and upon what conditions they may remain. In it are pointed out how the officers are paid for their services and the growers for their fruit. In it is specified that the growers must deliver all their fruit which they have to sell to the manager, and that they must not pay more than the association price for picking on pain of expulsion. In it is specified that the fruit must be carefully graded "A" and "B" and that if any does not meet the requirements of the "B" grade it will not be shipped at all. These rules tend to keep the members together, to regulate the price of labor, and to produce a uniform pack.

The business committee hold meetings as often as they think necessary to look after the interests of the association. They consider every subject thought to be of importance to the growers. They provide the growers with box and package material.

They provide them with stamping outfits and every grower is required to put his individual stamp upon both ends of every crate. And on every crate of the "A" grade the manager puts the association's trade-mark, a copyrighted stamp, which is the association's guarantee of high quality. They provide them with tally sheets with which to keep the account of the berry picking. They provide them with pickers' and packers' rules, with bills and posters for advertising for pickers, and with all other needed supplies. They make arrangements beforehand with commission merchants to handle our fruit the ensuing season. They know before the berries are grown where the bulk of them will be marketed. We never sell to track buyers. We always consign to commission merchants. We have demonstrated to our satisfaction that it is to our advantage to do so. We stand by the commission people in the beginning and they stand by us in the end when track buyers would desert us. They arrange with the railroads for cars. They arrange with railway and express companies for refrigeration. They arrange for receiving cars in transit. They arrange with electric light and telephone companies for their services. They arrange with numerous men for their services as bookkeeper, inspector, loader at the shipping station or instructor in the field. They look after all the details of the business, having authority to attend to it just as though it were their own.

Having briefly outlined the working of our organization, I will now speak of its advantages. Through organization we have been able to make more satisfactory banking arrangements than we ever made before. In a sense the First National Bank of Neosho stands behind our association. It has treated us very courteously, and has extended us many favors. For the convenience of growers it has provided an ample supply of small currency for their use in paying pickers, enabling them to make the correct change. It has offered the association the free use of the directors' parlor as an office for our business manager and the bookkeeper during the busy season, and there the growers are paid for their fruit. If any grower needs money to buy his package material early in the season he can get it at the bank by making a personal note and attaching to it an order to the business manager to pay the note off out of the first money received for his berries. This is to the grower's advantage because he can get box material at six per cent discount in December. If any grower needs money to pay his pickers and other helpers during the picking season, and before he has received any returns for the fruit he has shipped, the bank will advance forty per cent of the value of his fruit for his use without in-

terest. This makes it easy for the grower to accommodate his workers without any trouble or embarrassment to himself. These and some other minor arrangements have been very helpful to the growers and are the results of our organization.

By co-operation we get our crate material cheaper. Our association uses about ten carloads of box stuff every year. By buying this amount in a wholesale way of one factory we get it cheaper than if we were to buy the same amount individually of a local agent. Besides, by buying in such quantities we have in late years brought the jobbers into competition for our trade, and they have cut one another's prices. In this way we have beaten down the price and saved our association last year \$800. This year the factories are in a trust and prices are practically uniform. In the same way, by co-operation in wholesale buying, the Hood River Apple Growers' Union saved last year \$7,500 on their apple boxes, paper, and spraying material. Many other fruit unions throughout the country have sought and found the same advantage, and some western unions have recently been formed with this item especially in view.

By co-operation we have reduced our shipping expenses and gained a better market for our fruit. Before our organization, the growers shipped independently in small lots by express to nearby towns. But express charges are high, much higher than freight rates. By co-operation we combine the small lots of many growers and are able to ship in carlots under refrigeration to distant cities. This secured us cheaper rates and higher prices. We cannot afford to ship by express to distant markets for two reasons: first, the charges are prohibitive; and second, the berries will not stand up and reach the market in good condition in heated express cars. Besides, fruit shipped by express is sometimes very roughly handled. But in a refrigerator car the crates are slatted and nailed, staunchly braced, well iced and ventilated, and in such condition can be shipped across the continent to the best markets in the land. Thus through co-operation in carlot shipments, rates are cheaper, temperature is lower, the handling is decidedly better, distant markets can be reached, fruit arrives in better condition, and higher prices are secured.

We have secured better shipping facilities and better railway service. We have two railroads at our place. They both have lines to Kansas City, our great distributing center, one direct and the other indirect. We do business with both roads. The rates are the same, but the service is different. While there is no competition between the roads, no cutting of rates, they both solicit our business. They can afford to solicit it, for some years it is equivalent in profits to the railroads to the haul-

ing of five hundred cars of lumber, and it is all done in less than thirty days. While we do business with both roads the bulk of it is done with one, because it is more accommodating than the other. It has built for us with a little of our help, a loading shed nearly 200 feet long at which five cars can be loaded at a time. It gives our cars in transit more attention than the other. It keeps its promises to us better. It pays our claims more promptly and fully. It treats us with more courtesy and consideration. It tries to rush our berries to market with all possible expedition. At our solicitation it put on a special strawberry train. That train begins to pick up cars in Arkansas and closes up with our station at midnight. Then it heads for Kansas City. At Kansas City it connects with a fast Armour meat train and hauls our fruit to Minneapolis and other northern cities twenty-four hours quicker than the old way. That quick handling of our strawberries has been a great help to our association. It has put our fruit into the market in better condition and has given us the advantage of an earlier and higher sale. Now these results could not have been obtained but by concerted action.

I pass now to consider some matters which some may think are not relevant to the subject in hand. Directly they are not. Indirectly they are. In days ago a celebrated cook book contained a receipt for cooking a hare. In the introduction the author said, "First catch the hare." Catching and cooking are closely enough related to be included in the same receipt for cooking a hare. So growing and selling fruit are closely enough related to be included in the same receipt for selling fruit. Through organization growers are stimulated to adopt better cultural methods for the production of their fruit. In our association, after the routine business is disposed of, we are in the habit of discussing some phase of fruit culture. We hold experience meetings, in which we relate our ways of doing things, our successes and our failures. We have a kind of correspondence school in which the initiated instruct the aspiring; in which the aged teach the young; in which the veteran guides new recruits. The most experienced and successful growers are called upon to tell how they prepare their fields for the planting of a new bed, how they plant, how they cultivate, how they thin, how they renew an old bed, how they produce fancy fruit. They tell all these things and show how they do it, and thus we learn the better way from one another. Besides, we visit one another at different seasons of the year, look over one another's fields, and study one another's methods. When we know a grower has a particularly good field, and that he has marketed a

specially good crop of particularly fine berries, we go to his field, to see what he has done and how he has done it. In this way we catch on. When we come in contact with a patient who is breaking out with a pronounced case of measles we catch the disease and have a spell of it ourselves. So when we come in contact with a man who is breaking out with a pronounced success in growing fruit, due to good cultural methods, we catch the good health, adopt the better method, improve our own ways, and produce better fruit. "Who so looketh into the perfect law of fruit culture, and continueth therein, he being not a forgetful hearer, but a doer of the work, this man shall be blessed in his deed." Now fancy fruit will always sell, and generally it sells readily and at the highest price. It's the sorry fruit that slumps the market and sells slowly, that disgusts the consumer, exasperates the commission merchant and disappoints the producer. Grow better fruit and that in turn will produce a better market.

This leads me to say that organization stimulates the growers to do better grading and packing. If there is any one thing we give more emphasis to than any other in our association it is this: that we should be very careful and painstaking in grading and packing our berries. We print rules for our pickers and packers and tack them up on and in the packing sheds to teach them how to do the work. In the association the growers themselves are instructed upon this subject. In the sheds the growers give this matter their personal attention, or commit it into careful hands who do the work faithfully and well. Inspectors are sent out by the association to the fields to see how the work is done by the individual growers, and to show them how and where to make improvements in their packing. And further, inspectors at the loading station open every crate and if the berries do not meet the packing requirements they are set aside and not shipped. These things cause the growers to be very careful to pack their fruit well, so that they will bear the most rigid inspection. In this way we put a pack upon the market last season which enabled us to get the highest average price of all the berry associations in Missouri and Arkansas which shipped as many carloads as we, or whose period of shipping was co-extensive with ours. We have a commission house in Denver, Colorado, which has handled our fruit for years. It is one of the most celebrated in the West. One year at the close of the berry season, they wrote us saying, "Your berry is second to but one, the Hood River berry, the best berry in the world." One year later, after having another year's experience in handling our berry, after becoming a little better acquainted with

it, they wrote us again saying, "Your berry is the equal of the Hood River berry." One more year later, after having still another year's experience in handling our berry, after noting its size, after seeing its beauty, after testing its quality, after demonstrating its salability, they wrote us once more, saying "Your berry is the superior of the Hood River berry which we had thought was the best berry in the world." We are proud of this record. It is not only complimentary of our work, it gets us the money.

Another illustration of what can be accomplished by high class work in packing is the Hood River Apple Growers' Union. The individual growers of that union do not pack their own fruit. It is packed by the union. The union employs expert packers and one expert is placed with every orchard crew. That crew works under his direction. In this way they get a uniform pack. And how do they pack their fruit? They pack it in boxes, not barrels. The boxes are lined with white paper. The apples are nearly uniform in size. Each apple is a perfect specimen. Every apple is wrapped separately in a printed tissue paper. The apples are packed in rows and layers. A blue layer paper is laid upon the bottom of the box. A blue layer paper is placed between every two layers of apples. The layers are all alike. The bottom layer is as good as the top one. The middle layer is as good as either top or bottom. A blue layer paper is laid upon top, and some of the growers lay upon that a mat with their monogram beautifully printed in letters of gilt. On the ends of the box a label is put, a beautiful label, a work of art, the picture being a reproduction of the Hood River apple in size, color and shape. The sight of that picture makes one's mouth to water and him to imagine he scents the fragrant aroma and tastes the delicious flavor of that prince of western fruit. No marvel, if they pack apples in that way, that they get prices that are the wonder of the world. In 1902 before the organization, the individual growers sold Spitzenbergs for 85 cents per box. In 1903, after their organization the union sold Spitzenbergs for \$2.00 per box; in 1904 for \$2.10; in 1905 for \$2.60; in 1906 for \$3.00; and in 1907 for \$3.15. They attribute their high class packing and their astonishing prices to their organization. I do not say that all apples should be packed in this way and sold for these prices. In fact I am glad they are not. If they were, the common people would be expelled from the garden of economy for eating such forbidden fruit, and banished to the cheerless realms of millionaires. But I do say that good honest packing pays the grower every time.

Another advantage of organization is specialization. I believe in specialism. The association I represent believes in it. There are several berry associations in Missouri and elsewhere that believe in it. Five years ago we grew a dozen different commercial varieties of strawberries. One of our growers experimented with 36 varieties. But we found it confusing to the pickers. They did not all ripen at the same time. They were of different sizes, different shapes, different colors, different carrying qualities and had to be picked in different ways. It was hard to teach the pickers how properly to pick the different varieties. It was difficult to them. It was difficult to the packers and inspectors. It was very troublesome to the salesman who sold the fruit in the cars. So the force of these circumstances drove us to the selection of one variety of berries, the one most adapted to our soil and climate and which we can grow to the highest degree of perfection, and to give almost our entire attention to the production of that variety. We have practically made our reputation on that one variety. Hood River, Oregon, made its reputation on Clark's Seedling. Logan, Missouri, made its reputation on the Gandy. Vanburen, Arkansas, made its reputation on Mitchell's Early and Neosho, Missouri, made its reputation on the Aroma. All these made such reputations as they have by being specialists. There are many stock breeders throughout the country who have achieved great success by giving their entire attention to the growing of one kind of stock, such as Percheron horses, Durham cattle, Duroc-Jersey hogs and Plymouth Rock chickens. I would not limit apple and peach growers to one variety, but I would limit them in commercial growing to a very few popular varieties and to such varieties as are best adapted to their soils, climates and locations. It is much easier for an organization to handle one variety of good fruit than a dozen of common stuff. On this account the tendency of organization is to specialization.

There is one great problem in the fruit business which organization is slowly working out and which it will eventually solve, and that is the problem of disposing of our unmarketable fruit, our culls, our windfalls, our left overs, our immature and rotten fruit, much of which at present is lost. In my neighborhood one orchardist lost last year 3,000 bushels of refuse fruit. Another lost 2,000 bushels. And so it goes all over the country. What shall be done or what can be done with this class of fruit? "Gather up the fragments that nothing is lost." Learn a lesson if you will from the great packing establishments of the land. We send to them many thousands of cattle and hogs every year. At home in butchering them we throw away the hoofs and hair.

We throw away the heads and horns. We throw away the offal, the entrails and the bones. But at the packing house they throw away nothing. They utilize everything. They put everything through a process of some kind, convert it into a by-product of some sort, put it upon the market somewhere and sell it at a profit. That's the result of organization and the application of good business principles to their enterprise. Fruit growers need to organize in their several localities and build canning factories, evaporators, cider presses, vinegar plants and fruit juice factories. They need to pack these No. 1 apples for cold storage and market and all other grades they need to bring to these plants, convert them into desirable by-products of some kind, put them upon a craving market and sell them at a profit. And in this way we, too, can "Gather up the fragments that nothing be lost." These things are coming. They have already reached some localities. We await their general arrival with a great deal of hope. We look to organization to work out this problem and when it is wrought out, and it must be, then the millennium of fruit growing will be at hand. Then commercial orcharding and general fruit growing will be less wasteful and more profitable.

In conclusion, let us not lay again the foundation of individualism, of separatism, of every man for himself and his majesty after us all, but joining hands with our neighbors, let us adopt better cultural methods for the production of fancy fruit, better protective measures for its defense against its natural enemies, and applying better business methods to save the wastes and prepare the perfect produce for a profitable market, let us go on towards perfection in growing and marketing the golden products of the orchard and field.

Dr. Loope: I have often wondered and I think Wisconsin often wonders how it was that the Ben Davis ever got to be of such prominence in this country. The apple, of course, in form and color is nice, but in quality it is way off, as we say, but I want to say that I wonder no more after listening to the address that we had this morning and after seeing the men that Missouri sent out, like this gentleman here, like L. A. Goodman, like George B. Tippins that has come to us. We are in the dark no longer, they have hypnotized the whole world, and I want to say further in regard to this address, that I think I never have listened to an address that covers as with a blanket the whole substance as the address that has been delivered in such concise, epigrammatic way and in such good, square United States talk.

Mr. Daub: This speech reminds me of an old cobbler in England that was very much of a reader, and a great thinker,

and Mr. Gladstone heard about him and he went to see the old cobbler who did not know him, and he conversed with him and when he left the old man said, "I wonder where in the world the old fellow got all my ideas." (Laughter.)

CO-OPERATIVE MARKETING OF FRUIT.

EDW. HUTCHINS, Fennville, Mich.

I am glad to meet the fruit growers of Wisconsin. Every summer when we are shipping the last of our Duchess apples we find the price usually drops and the market reports state that Chicago has a liberal supply from Wisconsin. And upon going up and down South Water street in that city at that time I have seen some as fine Duchess apples from this state as I ever saw. I have been interested, therefore, in meeting the men who grow such nice apples. I am reminded that when I speak of fine apples in this way I must be particular to make myself understood. We think that we grow some fine apples in Michigan and if I am not careful the report may go home that I said those Wisconsin apples were the finest I ever saw and some one will ask me how much I have been around my own state.

I recall the story of the old negro slave who saw a man passing and remarked to his master that that was the finest looking man he ever saw. His master told him he must always except Massa. Presently he saw another man going by and he said to his master, "I declare for it, Massa, dat are man looks de mos' like de debil of anybody I ever see," and then remembering his instruction he added, "'cept Massa." So, in speaking of the nicest apples I ever saw I suppose I must always except Massa, and in order to avoid possible embarrassing complications when I get back home I will say that those Wisconsin Duchess apples were as fine as any I ever saw.

And this brings me to a point which I wish to call attention to, and that is that there is competition between your Wisconsin fruit and our Michigan fruit and I think that I may give bare suggestion to a broader view of the question of co-operative marketing than was perhaps contemplated when the subject was given to me.

In order that there may be effective co-operation there must be an intelligent understanding of the situation. In order to

market our products with the largest measure of profit we must understand two things. We must know the value of the article to be sold and we must also know where the best market is.

It does not reflect a very large degree of sagacity on our part that you of Wisconsin and we of Michigan dump our products together into one market without any very definite knowledge of the condition of that market or of markets in general. It is quite possible that you people here in Wisconsin might have found a more satisfactory market in Duluth or Minneapolis or St. Paul or some western point while we might have sold our apples for a little more in Detroit or Toledo or some city to the east, if only we had known the condition of those markets. So that it appears that knowledge is one of the main things needed in successful marketing, and the question arises whether or not some general scheme of co-operation in securing this is not feasible. We find this is quite important in Michigan in a local way in disposing of our fruit. The buyers come from Benton Harbor or some other place and tell us at Fennville that they can buy all of the Elberta peaches they want elsewhere at 60 cents a bushel and so they can't pay us \$1.00 for ours. And in the absence of reliable information other than their report we are not prepared to dispute them and prices are affected considerably by their bearish reports. In order to be able to meet these men on equal terms some of our growers at a few of the important shipping points have taken the preliminary steps towards the organization of a bureau of information for the purpose of better informing the growers regarding prices and market conditions. Perhaps I ought not to say anything about this as there has not yet been sufficient time to put the plan into practical operation and there are some difficulties yet to be met, so I will only give the general plan of the work. The growers in a given locality are to organize and elect, among their officers, a secretary, who is the person to receive and give out the information. These several secretaries meet once a year and elect a general secretary, who is to gather reports from market centers both local and general regarding prices and market conditions and transmit this information to the local secretaries, and these in turn give it to the members. This may not work out successfully in practical operation and perhaps I ought not to have referred to it. One of the greatest difficulties in the way of inaugurating the system is that so many of the growers fail to realize the value of the information. But I think that it is evident that there is a large need for this information and to recognize a need is one of the first things in the way of instituting the remedy.

Another line of information that is needed is of crop conditions. I think that this is particularly important in disposing of the apple crop. Two years ago if we had known the conditions of the apple crop throughout the country by the middle of August it would have been worth thousands of dollars to the apple growers in one end of the county in which I live. The apple buyers have their organization and had collected the information regarding the condition and size of the crop and they found that it was very short throughout the country and they bought up quantities of apples at less than half what the fruit was worth at gathering time. Last year a very singular condition existed in this country in the apple market. The buyers gave out a report of an abnormally large crop and determined on low prices. It is said that one national association of apple buyers pledged its members under penalty not to pay over \$1.00 per barrel for apples barreled and delivered at shipping stations. The growers were suspicious of these bearish reports and refused to sell at the figure offered and a deadlock existed between the buyers and the growers in many of the apple growing sections until well into the harvesting season, when the buyers made quite liberal concessions. It may be added that from some reports made it appears that the actual pack of apples fell fully one third short of the buyers' estimate of 65 to 70 million barrels.

Now I submit that it would be creditable to the fruit growers of this country if they were to devise some way of procuring this information for themselves. It seems to me that we have the machinery ready made for this purpose. The several State Horticultural societies have a national organization with a representative from each. It seems to me to be perfectly feasible for these secretaries to collect very accurate information regarding the condition and approximate size of the crop in their several states and this information can be interchanged among the secretaries and from them to the members and so the information could be readily supplied. Each season the secretary of our Michigan State Horticultural society sends out cards of inquiry with return cards bearing blanks for reports of the various fruit crops and these are sent to a large number of the leading fruit growers in all parts of the state. The reports so secured are compiled and sent out to the members of the Society and are very valuable. Much aid in marketing the fruit of the state has been secured in this way. Now, if this were carried out in half a dozen of the principal fruit producing states and the information exchanged between the secretaries it would be of large value to the members. \$15.00 for each state would

be sufficient for the purpose of one report and the information would be the most valuable and reliable of any that could be obtained. I am acquainted with the man who reported our section for the apple buyers' association and he had probably not visited a single apple orchard during last season up to the time of making his report, and he had it two or three times larger than the crop would warrant.

But I suppose it is of the co-operative systems that have been in practical operation with us that you wish to hear. We have had three general systems of disposing of our fruit in vogue, consigning to commission houses, selling to buyers who come direct to the orchards or shipping points, and the central packing house system. The last of these is the only one that has been conducted in a co-operative way. Then we have a Fruit Shippers' Association which is a co-operative concern. This is practically an express company and its only business is shipping fruit, mainly peaches, to Chicago. By a very satisfactory arrangement with the Pere Marquette railroad company the association assumes all of the responsibility of loading and unloading cars and collecting freight charges, the railroad furnishing the cars and doing the hauling for a certain rate per hundred pounds. The association has been carrying on this business until the last two years when the train service has been very unreliable and cars have not always been furnished. The Association furnishes the loader and the unloader and does the manifesting. Before this was organized the American Express company did the business and charged $6\frac{1}{2}$ cents for freight on a ten-pound basket. The Association at once reduced the rate to $3\frac{1}{2}$ cents and later to $2\frac{1}{2}$ cents per basket. Meanwhile it has accumulated money and has expended this to the extent of several thousand dollars in improving the highways leading to the station.

The central packing house is sometimes operated in a co-operative way and in some cases an individual or company organizes and runs the concern. In either case the business is ordinarily managed on a similar plan. Several growers engage to deliver their fruit, usually peaches, at a building which has been provided for the purpose on a railroad siding. The fruit is delivered in baskets or boxes just as it was gathered from the trees and a receipt is given for the quantity delivered. Each man's fruit is then graded and packed separately and the owner given credit for the number of packages of the several grades. The fruit then goes into a common lot and is loaded into cars and

sold and each contributor is paid his pro rata share after taking out expenses.

This system has a number of advantages. The work of packing is taken away from the farm and is usually a great relief in this way; the grading is more carefully done and the fruit commands a higher price because the quality is reliable; it is sold by a capable person who makes that his business and brings a higher price; packages are bought in quantities and a saving is effected in discounts; the fruit is loaded from the packing bench immediately into cars with the least possible handling and reaches its destination in much better condition on this account. The expense of selling is reduced to a minimum.

But the profit is better understood by a comparison with other methods of selling fruit. In the earlier days of selling fruit in Michigan it was the custom to consign the fruit almost entirely to commission houses in Chicago, thus making that city a general distributing center. The fruit for other parts of the country went through Chicago and paid a heavy tribute to the dealers there. Now, let us see what the expense of selling in this way is. Suppose that a bushel of peaches sold for \$1.00 there. The freight and cartage charges are 15 cents and commission 10 cents, making 25 cents which the commission merchant took out and returned 75 cents to the grower. If the basket was then reshipped to say Buffalo, N. Y., as was quite common, the charges would amount to nearly 35 cents more and the fruit would have to bring \$1.35 from a grocery in Buffalo in order to pay the Michigan grower 75 cents. This represents about the average of expense for distributing fruit outside of Chicago in this manner. But if the Buffalo buyer were to come to the Michigan grower to buy the fruit he would naturally argue that 75 cents would be about the market value of the fruit and the 25 cents that would otherwise have been taken out in Chicago would go into his pockets. The manager of the packing house understands these differences in markets and is able to profit by them.

But perhaps the description would not be complete without noticing some of the disadvantages of the system. One of the first is to find a competent manager. Men who are capable of selling goods usually can command a larger salary than fruit growers are willing to pay them. Then growers sometimes imagine that they are a little more capable of disposing of their own fruit than their manager in the packing house and so drop out of the deal. I have known this to occur. Then again orchards are short lived with some men. It has been said that there are two classes engaged in fruit production—those who

are fruit growers and those who grow fruit. Some of the latter class sometimes lose their orchards and I have known of packing houses that have run very successfully a number of years being obliged to suspend business because the members did not produce fruit enough to keep it running. But when a sufficient quantity of peaches can be obtained within a convenient distance from the packing house this system is recognized as an ideal one among growers.

Another very promising field for general co-operation among growers as well as dealers who may be engaged in marketing fruit is in some measure that shall insure reliable packing. This will not only result in larger pecuniary returns but, what is of far greater moment, would raise the general moral status of society.

The large packers of fruit in California understand the value of reputation in marketing fruit and a package of fruit from there is always reliable. Fortunate would it be for the growers further east who pack fruit—or put it in packages at least—if as much could be said of them and their output. The greater part of the fruit may be honestly packed and yet if a buyer finds one that is not so put up he is suspicious of the next 20 that he buys. It is a matter worthy of the careful consideration of fruit growers if we may not properly co-operate with the League of Commission Merchants in their efforts towards securing such national legislation as shall insure full sized packages and honest and reliable packing.

FRUIT MARKETING AS VIEWED BY THE COMMISSION MERCHANT.

WM. L. LOEFFEL, Representing Barnett Bros., Chicago.

When asked to be present at the fruit-marketing session of your annual convention, and take part in its deliberations, I took it for granted that being a commission merchant, you expected me to treat this so important a subject from his standpoint.

There have preceded me in this discussion a president of one and a general manager of another fruit-growers' and shippers' association, also individual growers and shippers of prominence from various states, leaving very little that is pertinent to the subject for me to treat. Yet, mean is the commission merchant who, when a neglected article is entrusted to him for disposition,

does not find in it some redeeming quality to recommend it to a buyer and so affect a sale; so with your indulgence I hope to thresh some valuable grains out of this already so thoroughly threshed subject.

From time immemorial has fruit-marketing agitated the minds of men. It is an occupation that has been engaged in from the beginning of humankind: and it is a disputed point (one to which brother Louis Erb of Cedar Gap, Missouri, has given considerable thought and study), viz: "Whether it was the serpent in the Garden of Eden or Mother Eve that first engaged in fruit-marketing." Certain it is there are still plenty of Adams ever ready to take from the hand of Beauty the fruits of mother earth.

Fruit-marketing may be defined as bringing to a place or places especially designated for that purpose the products of farm, garden or orchard, there to barter them for some other article or articles wanted, or to accept for them a specified quantity of a recognized medium of exchange. These specially appointed places have been termed markets; and no matter what country's history one reads mention is made of its market places.

It was here that the producers themselves offered their products for sale, and as business in their market places continued throughout the entire day and night, it was often necessary to entrust the selling to a substitute, and these substitutes at first were either their wives or grown-up sons, latterly regularly appointed sales agents.

These substitutes devoted to selling all their energies and became adepts in the art. While the father, the grower, concentrating himself mind and body to producing and preparing the products for market, became expert in his line. Therefore, a close relationship exists between grower and commission merchant. Even today if you would take a census of the various commission merchants you would find that three-fifths of them were either growers at one time themselves, or are sons of growers or in some way related to them.

In times gone-by the fruit products of a community were seldom greater than its consuming capacity and whenever these were in excess they went to waste; only occasionally into by-products. Tropical fruits and even those grown in temperate zones were with few exceptions never seen in countries other than in those in which they were grown and then only on the tables of princes and the rich.

Lack of suitable transportation may be assigned as the reason for this. But as the means of transportation increased we see

at first the seaport cities only supplied with foreign products, then gradually the more inland towns.

For the advancement of the fruit interests there were pressed into service new discoveries and inventions as soon as made. Wherever fruit-products exceeded the local demand, there outlets were created and a demand elsewhere stimulated. Increased and improved transportation facilities were important factors in the development of the fruit industry; lack of these facilities or congestion in them will stifle or retard it.

Let us look at the more recent history of fruit growing and marketing. Many of us remember twenty and thirty years and even longer ago, that with much smaller crops than now, lower prices prevailed. Causes were excessive concentration at local markets, and lack of distribution. Realizing this those who were entrusted with the disposal of these products—viz. the commission merchants—rose to the occasion, thoroughly canvassed not only their immediate neighborhoods but also the distant cities and the foreign markets. They ascertained their wants and supplied them. The overstocked markets were relieved, the excess advantageously disposed of, a higher standard of prices established, and the growing of fruits and vegetables made more profitable. A satisfactory working arrangement existed between grower and commission merchant which was productive of all these results. And as long as these relations continued to be satisfactory, complaints were few.

Production increased until it was conducted on an enormous scale and in spite of set backs either on account of imperfect or inadequate transportation, or loss incidental to the perishable nature of the goods themselves, paying prices were maintained.

But these conditions could not last forever, and there came the demon of distrust and discontent. The harmonious working relations existing between grower and commission merchants were either severed or greatly strained. The grower was led to begrudge the selling agent his legitimate compensation and he in consequence took steps to reduce the percentage of commission allowed for his services, just as though ten per cent. for fruit and five per cent. for selling produce is not an already very low compensation.

But many a grower did not stop there, he went further. True account sales rendered by able and reputable commission merchants, satisfied him no longer, he wanted more; and how did he go about to get more? He sent letters to commission merchants, reading about as follows: "I have divided my today's shipment between you and two or three others of your competitors. He who returns me most will in future receive my en-

ture shipments". Does any one here present believe that there is or ever has been any commission merchant who would take such letter seriously? Does it not show that such a grower or shipper as this one referred to, had absolutely no confidence in any of the merchants he proposed to patronize? Was it not his aim to put commission merchant against commission merchant, with a view of receiving more than his goods actually sold for? What wonder then that some crafty or unscrupulous commission merchant (and there are black sheep in every fold), perceiving the gullible nature of such a shipper, should take steps to systematically exploit him? And how did he go about to accomplish his end? For a few days he rendered account of sales at higher prices than the goods actually sold for, and although the shipper knew better, in nine cases out of ten, he entrusted the bulk of his shipments to such a baiter.

Yes, the fish was landed! And then what awful cries of "Thievery" were there not heard about the dishonesty of the commission merchant. And how did these cries not reverberate from one end of the country to the other?

This is all ancient history and repeated every season. I wish by no means to justify the course pursued by the crafty commission merchant referred to, although it was a course called forth by the action of the shipper himself. Reputable commission merchants condemn such acts, discountenance and expose them whenever they can.

But if growers proceed in the manner referred to above, what incentive is there for the commission merchant to advertise the commodities entrusted to him, to thoroughly distribute and advantageously dispose of them, if his compensation be reduced below the cost of handling and his supply a source of continual uncertainty?

I seem now to hear somebody say: "There need not be an uncertainty of supply; commission merchants can remove the uncertainty by buying at producing points." Yes, that is so. But by so doing does not the commission merchant change the nature of his business, does he not cease to be a commission merchant, the agent of the growers?

Being of an accommodating nature, many an erstwhile commission merchant makes this change in his business and becomes a dealer pure and simple. Let us follow him in his new business. He lets it be known that he is ready to make purchases f. o. b. at producing points. On the supposition that all goods offered at producing points are graded and packed according to specified and established rules, he orders as large a supply as he thinks his trade and market will stand, wires even

the money to many a salesagent of shipping associations. And his cars ordered are shipped and they are rolling. Not having taken his neighbor into his confidence, the latter who was similarly metamorphosed from commission merchant to a dealer, orders likewise; and so does another neighbor and still another and another.

The steadfast commission merchant, however, remains not idle, he wires his market quotations to producing points, shipping simultaneously; and solicits shipments as he always did. Those localities which had not been favored with orders, and others which had more products to ship than they had orders for, will consign their unsold commodities to the merchant soliciting them; and there are then rolling to the one objective market bought and consigned goods in quantities greatly in excess of the demand. What the consequences will be can be better imagined than described. Over-supply, decline in the market, and general demoralization. And this state of affairs especially if it has taken place on a principal market will be quickly reflected at the producing points; orders will be countermanded and the prices will decline sometimes fifty and seventy-five per cent.

As an example: During last year's shipping season of peaches at Texas points, \$1.00 per crate was the price on Monday; 50 cents to 35 cents on Wednesday, Thursday and Friday. It is one of those unsatisfactory conditions against which both grower and commission merchant are raising a cry of complaint. The buyer will only purchase when he has a sure profit in sight, and abstains from buying when the results are doubtful, and since many a community cannot sell all or only a part of its products, what is it going to do with that portion of its products remaining unsold? Leave them to rot because there are no f. o. b. buyers? "We want to sell no matter at how low a price," is the cry. Will this cry not invite the monopolist of untold financial resources or a consolidation of speculators of means to buy and sell the entire crop at its own figures, similar to the Beef trust or any other trust? When analyzed thoroughly has not the inordinate f. o. b. selling craze proven to be the parent of trusts?

This is the picture of f. o. b. selling with the supposition that grading, packing and loading has been done honestly and by experts. But at how many producing points is this the case? It is and remains only a supposition; facts at any of the shipping points prove the contrary. Did not every merchant who had made purchases of peaches, tomatoes and potatoes, f. o. b. Texas or any southern point last year, lose heavily? Not because the

markets on which their purchases were disposed of were low, but primarily because the packing and the grading were poor and dishonest.

This state of affairs did not exist in extremely southern points only, Michigan, Illinois and many other producing points presented similar conditions. Benton Harbor has a large local market. Some goods are stuffed, I dare say, just to sell without any regard for the rights of the buyer. Consequently the complaints of the consumers who purchase Michigan fruit in original packages are loud and many. Have they not found, for instance, in their baskets of peaches a few large ones on the top and trash and culls in the center and bottom? Does not all this tend to bring the fruit traffic into disrepute? And although the grower and packer is the sinner here, the commission merchant receives the blame and as a rule must make good the loss to his customer who bought in good faith.

Having alluded to the causes that have either directly or indirectly contributed to the unsatisfactory manner in which fruit is and has been marketed, the next question arising is: "Can these causes be removed and can the enormous crops now grown be satisfactorily disposed of?" I for one most emphatically say: Yes, these enormous crops can be handled advantageously, yielding a profit to the grower, a living to the selling agent, and a blessing to the community. We have considered some causes of complaint, some abuses; each and every one by inference can suggest the remedy, and we will revert to only a few requirements that will make fruit marketing what it ought to be.

A first requisite will be, careful harvesting, proper grading, honest and expert packing, and suitable packages. The necessity of all these is apparent. But the subject, grading, packing and packages, has been so often and so ably treated, that I will not waste very many words on it. Permit me only to ask that this society in convention assembled, co-operate with the legislative committee of the National League of Commission Merchants by passing a resolution favoring a national law regulating fruit packing and packages, and then assist as much as is in its power through its members, representatives and senators at Washington to have the law passed.

The second requisite is the proper disposition of culls and second class fruit products, and such fruit products as arrive on the market in bad condition. The importance of this consideration is apparent to every thinking fruit grower and shipper. Eliminate from the market the culls, dispose in some satisfactory manner of the second grades and also of those

strictly No. 1 grades which for some cause or other reach destination in poor condition and you will create a healthy and satisfactory market. The culls should be kept at home, be fed to the hogs, provided the grower can do nothing better with them. The second grades when crops are heavy and those that reach the market in bad condition should go into by-products. And I would advocate the erection at centrally located points of conserving establishments that can convert these into jellies, syrups, dried, preserved or any other by-products.

The third requisite, intelligent and honest distribution. With culls, second grade, and goods in poor condition, removed from the market it is apparent that No. 1 fruit no matter of what variety, will bring as much and more money than if all the three grades were offered together. But the quantity will be still large, and judicious distribution and proper handling by able and conscientious commission merchants will be a necessity.

Distribution theoretically is an easy proposition. Forward to each market only what it can handle to advantage at a satisfactory price. If congestion is imminent instruct your representative to consign to other centers any surplus which you may control. A practical illustration may be best on this point:

Our house has for a number of years represented on the Chicago market, shipping associations located in Texas, Alabama and Georgia, all located in or near the 32°N. latitude, growing similar commodities and shipping about the same time. Let us take peaches for example. With the exception of a few cars, our Texas connections send all of their peaches to us in Chicago. These we sell on the Chicago market provided the Chicago market is satisfactory—if not, we reassign them to either Milwaukee, Madison, St. Paul, Minneapolis, Duluth, Grand Rapids, Detroit, Toronto, Buffalo, Toledo, Cleveland, Columbus, Pittsburg, or any other available market. We proceed similarly with shipments of peaches from Mississippi, Alabama and Georgia. The markets to which we reassign act similarly in case of an oversupply. The result has invariably been satisfactory prices for the grower.

This thorough distribution prevents congestion on any one particular market, and assures the very best prices obtainable for the commodities shipped from any producing point. Here it is hardly necessary to mention that the commission merchants so selected in the markets must be men of tried ability, integrity and experience.

A fourth requisite, the disposition of the excess of the No. 1 fruit, after thorough distribution has reached its limit. If such fruit consists of strawberries, peaches, pineapples, tomatoes and

similar varieties, they should go into by-products, and the conserving establishment above referred to should be made use of. But such commodities as apples, pears, some varieties of peaches, also potatoes, cabbage and the like, on which the time of consumption can be extended, may be placed in cold or common storage for a longer or shorter time, as the nature of the commodities or the market may require.

We have considered satisfactory fruit marketing and elimination of everything that by experience has proven disastrous to it. We treated specific requisites, proper grading of fruit, the disposition of culls and second grade articles, proper method of distribution of first grades, disposition of the excess of No. 1 products after intelligent distribution had supplied the available markets, storage plants, and by-products: all the necessary qualities of the men who should be connected with the various branches of fruit marketing.

The honest, able, and up-to-date commission merchant having made a study of marketing and distributing knows better what to do under continually changing conditions and what methods to pursue in order to obtain the best results. Many a grower, who thought he knew all about fruit marketing when he went to the city, and tried to teach his commission merchant a lesson usually went home wiser and better instructed.

The commission merchants among themselves have been instrumental in bringing about many reforms in the methods and facilities of transportation. They have fought hard and assiduously for the reduction of excessive express, freight and refrigerator charges; they are the truest allies the growers and shippers have.

The average commission merchant is intelligent, up-to-date, able, and honest as he should be. And why should he be otherwise? Is he not the descendant, the relative, the agent of the grower? And the grower can depend upon it that the commission merchant who possesses his confidence will perform his duties well and conscientiously. Yet there are exceptions to every rule, and I do not deny that there have been commission merchants who were not true to their trusts. If you entrust to the worthy, and those are easy to find, the handling of your own crop and that of your entire locality you will find him a good distributor and an able representative, and he will bring you as a rule larger net returns than if you yourselves attempted to perform his duties. Note the admirable manner in which the Wisconsin, the Cape Cod and Jersey cranberries have been handled; the Rocky Ford cantaloupes, and many other commodities from different sections.

While the commission merchant is ever on the alert for anything that may improve the fruit industry, he realizes that the fundamental principles for the regulation of prices are supply and demand. He realizes that proper distribution prevents congestion, and organization is conducive to success and in the co-operation the commission merchant is a co-worker and not an antagonist.

He as much as any other respects and observes the law of mine and thine, and that justice will be meted out to every one according to his deserts, and he makes confession in the same country faith to which his fathers paid homage, and so nobly sung by Norman Gale:

Here in the country's heart
Where the grass is green
Life is the same sweet life
As it e'er hath been.

Trust in God still lives
And the bell at morn
Floats with the thought of God
O'er the rising corn.

God comes down in the rain
And the crop grows tall;
This is the country faith
And the best of all!

WHAT THE EXPRESS COMPANY CAN DO FOR THE FRUIT SHIPPER.

C. O. STIMSON,

Agent American Express Co., Baraboo, Wisconsin.

It has been said that the fruit business is a lottery. If this be so the express company should be taken in custody for it is the means of carrying it on. However disposed of, the transportation company generally shares in the profits.

The public generally does not realize that the daily business transacted by an express company amounts to any more than the ordinary undertaking for shipment of the package of necessity brought to its door, or perhaps the sale of the ever convenient money order at a nominal fee payable anywhere.

But the business man or the farmer or whosoever comes in direct contact with these incorporations sooner or later learns that various transactions can be performed among which is forwarding money by telegraph, collecting notes or accounts, redeeming articles pawned, purchasing train stop tickets or berths and last but not least the purchase or sale of all kinds of commodities anywhere.

It is in this connection that my subject brings me. Perhaps the farmer or the storekeeper desires to obtain an article which is unobtainable locally. He may not have the time for correspondence or the inclination to go to the necessary trouble of ordering from some distant city or perhaps the knowledge as to just where it may be bought.

He communicates with the express agent, tells him his troubles and it is all over. The agent takes his order, often a sample of goods accompanying and forwards same by the fastest express trains to representative at point designated. The representative receiving the order uses his own personal judgment in the selection and purchase of the article desired, forwarding it by first express or stating reasons of delay. For this service the company receives nothing but the usual charge for carrying.

To aid in the purchase of commodities likely to be desired at some distant point, some express companies have adopted a list of such articles stating at what points they may be obtained and price. This list contains such articles as butter, eggs, cheese, honey, poultry and also all kinds of fruit as well as many other articles. Then perhaps this same individual may have some article of manufacture or produce for which he desires a market. He may have had past experience and be familiar with some reliable firm who will gladly take care of his shipment on receipt and dispose of it at market price charging the usual commission, but whether or not such is the case it is the business of the express company to take this shipment to the most likely market and dispose of same as if it were their own to the best possible advantage.

If there are reliable commission firms represented at point of shipment the commodity is generally turned over to that one best suited to make the sale at market price, who in turn disposes of shipment for account of shipper.

In some of the larger cities returns are now made direct to shipper by approval of company delivering, in this manner saving any possible delay as well as insuring just and true returns.

In order that agents may keep better posted some express

companies publish a complete market report in the large cities, a copy of which is furnished each office requesting it almost daily, thereby enabling them to designate the best market.

Of course where there are no commission firms represented and consignments are made they are either sold directly to the dealers or left with them in some instances to sell for account of company and sometimes even in small towns are sold direct to the consumer. For these services the express company receives only its usual charge for transportation.

Better than this manner of marketing the article, it may be placed on the list of salable commodities, or quotations forwarded to likely points with the view of securing orders. In these ways many tons of produce such as butter, eggs, poultry, veal, honey, vegetables and last but not least, fruit, are disposed of yearly at a very satisfactory and encouraging price.

This branch of the express business is appropriately named the Order and Commission Department. It is a friend to the merchant and the farmer and consequently the fruit shipper. I dare say it is the best friend the fruit grower has, for it not only helps to find the best market but it stands between the grower and monopoly. They can use it as a hammer to hold over the buyer's heads to force them to give fair prices. I have known of cases where solicitors congregated and were never known to buy at all until the grower used the express company as an outlet for shipments, when they were glad to pay often exorbitant prices in order to compete.

There is no class of produce more difficult to handle or that requires more study in the marketing of same than small fruit. From the time the fruit is ready for shipment till the last of it has vanished the successful grower must keep constantly on the alert in order that he may secure the best possible prices which are governed by the supply and demand. Nor is there anything in which there is such chances of loss, for today it is here and tomorrow it is gone. Thus it can readily be seen how the express company with its representative in every town can be of great help to the grower in marketing, if the work is carried on consistently by all concerned. There are many ways in which they may render their assistance but perhaps the most important is their aid in finding the best possible markets.

In the past the greater share of the growers have relied on the commission firms in the large cities to dispose of their fruit, making consignment after consignment, knowing little about the market, being content with what was received. Of course if he is dealing with a reliable firm, and there are many, he

will receive all they can obtain, deducting the usual commission and express charges. But perchance should he be induced to consign to some unreliable firm he will be a heavy loser sooner or later. As the supply is consumed by the public everywhere, their profits if they were unable to sell locally, must be obtained either directly from the commission firms who must make their profits direct from the grower.

Many growers begin to realize the fact that the consumer prefers to obtain his fruit direct from the grower, thereby obtaining fresh stock at lowest prices and spend considerable time just previous to the opening of the season corresponding with reliable dealers at points prospective and secure many valued orders lasting sometimes throughout the season at encouraging prices. However, the result sometimes is that although the customer is reliable, the fruit arrives in poor condition or market gets overstocked, there is a loss and in the end there is a tendency to make a complaint and the shipper is entirely at the mercy of the dealer who makes a liberal reduction and settlement is made.

The express company quotes prices, using blanks printed for that purpose which are forwarded to its agents at all prospective points. On these quotations blanks instructions are given them to either call on all reliable dealers or notify them of prices quoted and secure their standing of a trial order at least and forward to office, quoting to be filled by first express. As all orders have the personal attention of the agent at shipping point who sees that they are filled by reliable growers with choicest stock, dealers are not so reluctant in placing their orders. Moreover as agents at small towns work on commission receiving a percentage of the express charges on goods both forwarded and received and as agents at larger points must make a perceptible showing in order to hold their position, it can be readily seen that it is to their interest to not only secure these orders but also to give entire satisfaction, for without it the orders are lost.

The agent also has an opportunity to inspect the fruit on receipt, settle any complaints and regulate future orders. Many a man in this position looks forward to the fruit season and reaps quite a harvest from the nice business done. As the season advances every change that takes place in the market is transmitted to them by distributing office, thereby enabling them to keep posted and when favorable prices permits perhaps secure further or increased orders from interested parties. In fact the express company is a slave to the fruit grower, ever

ready to attend to his every want; not only taking care of his correspondence but even keeping his accounts if necessary.

Perchance should he for any reason at the end of the season have any account open for collection, here too the express company is in an excellent position to be of service. The representative of the company can corroborate the statement of shipments by his records, convince consignee of just dues and for a small fee if account is sent through the collection department, will often be successful in collecting when all other plans fail. If all fruit could be disposed of in the manner just outlined, and it seems it might be, except perhaps in case of an overwhelming crop, with the co-operation of important shipping points, it is quite apparent that better results would be obtained both for the shipper and for the dealer, the shipper receiving better prices for his fruit at a known figure and the dealer receiving his supply fresh from the grower just as desired.

In case of the overwhelming crop there are many methods of disposition which at the present time are generally resorted to. Some may be consigned to the commission merchant, while some may be disposed of for cash to the speculator, but here again comes the Order and Commission Department of the express company to the fruit growers relief. We know that the commission merchant sometimes consigns shipments to likely dealers throughout the country, giving them instructions to dispose of to best advantage for account of shipper. Why not we and save this middleman's profit?

With this end in view the express company governed by past experience by correspondence and by information obtained from lists of officers furnished, containing names of dealers in the respective towns, and number of packages of each kind of fruit each dealer can ordinarily dispose of to good advantage, is in a fair condition to designate a prospective merchant, forwarding to each agent just the amount he should be able to dispose of charging the usual low rate for the services. A bill of the shipment is forwarded with it, with instructions thereon, requesting that sale be made at billing price, which price is governed by the market if possible, otherwise at best price obtainable.

Where there is a commission firm represented at point of shipment, although it has been found that generally it is not policy to consign to such points except in the large cities, on account of market being generally well supplied by them, fruit is generally delivered to them to sell for our account, unless there is reason to believe that proper attention is not given

shipments as it is not policy to antagonize these firms by selling to their customers. It is the smaller towns in general where success in this method is the best, sometimes a very small one as it were. It stands to reason that it is the supply and demand that governs the prices obtained. Quite often orders are received especially throughout the west from very insignificant towns for large shipments, followed later by similar orders and it is found on investigation that some agent has secured the orders from some inland towns whose people are glad to obtain it at any price. Then again it may be some dealer who has taken the orders from the farmers, who come for miles across the prairie to trade at the little country store. But do not think that all is golden in these ventures for it is not. You have all kinds of men to deal with as in any other business of disposing of your fruit. However, you have the express company back of the dealings and it is to their interest that every effort be made to secure the best possible prices and forward true and prompt returns and if justice is not done they are soon found out for their officials are generally on the alert and do not have to visit an office many times to discover the interest taken in this great work.

Generally the natural supposition on receipt of a poor sale is that shipment has been slaughtered, whether consigned to the ordinary commission house or through the Order and Commission Department of the express company. No matter what the conditions are the seller is invariably to blame. Quite often it is the small inexperienced shipper who makes these accusations, the experienced man never making a complaint as he knows what to expect. They little realize the conditions at time of shipment. Perhaps the weather is hot and sultry and fruit is overripe and soft or possibly on arrival at destination, market has become overstocked.

If complaints are followed up vigorously a large per cent of cases are satisfactorily explained. Do you ever hear of these complaints when conditions are reversed? Still quite often the fact is only too true. Moreover it is the agent's own personal interest that satisfactory returns are made, not only to increase his revenue but in order to hold his position. Many an agent has been severely reprimanded and no few removed on account of lack of interest in this branch of the express business.

Sometimes the correspondence department of the express company renders valuable assistance to the marketing of fruit. We all realize that holidays and Sundays, although we like to see them come, are drawbacks to the fruit question, especially in the case of berries. How easy it is for the express company

to drop a card to each agent on its line soliciting orders that may be filled for the holiday on account of some demand on that date or for Sunday at points having restaurants and hotels desiring fresh fruit. In this way large quantities are satisfactorily disposed of yearly.

If the conditions are favorable, weather is cool and fruit in good shipping condition, fine results have been obtained by consigning to far distant points for Monday's arrival, thereby these towns receiving fruit early Monday when ordinarily it would not be received until later and is in good demand. However, experience has taught that it is poor policy to make these shipments when conditions are unfavorable, weather is hot and fruit is soft. In fact these are conditions that should be guarded against in all consignments by express.

Further than the marketing of fruit the express company has an all important duty to perform in the transportation of same in order to deliver it at destination in first class condition. With this end in view it is the companies' aim that shipments be handled with extra care, but it is quite often the case that this is not or *cannot* be done, on account of lack of time or room to work.

I recall many instances where trains have left stations before shipments were loaded although every effort was being made to load cases and those that were so hurriedly loaded were in about as bad condition as those delayed, which perhaps may spoil before destination is reached.

If the railway companies undertake to carry express matter, why should they not be compelled to hold their trains until especially perishable express matter be loaded as well as their passengers, mail and baggage?

Quite frequently the express company at important shipping points where the business will permit, have been successful in securing extra express cars set out in a convenient place to be loaded and picked up by regular shipping trains. This plan is very convenient as well as profitable to the growers for they are able to load direct from their wagons in a careful manner, saving necessary handling when loaded in ordinary manner. Then, too, they have the refrigerator fruit cars which are carried on passenger trains and may readily be secured if desired for carload shipments.

These are generally put in service for far distant shipments and may be seen daily in the spring time transporting the southern fruit to the north as the southern grower finds them a necessity. Still more might be accomplished by the express company in aid of the fruit grower, for this work is just in its

infancy, such as the personal solicitation of orders at prospective points by some representative of the express company employed for that purpose. Also the collection of each bill of fruit ordered through the company by the agent on receipt at destination.

There is no doubt that all employees have their time taken up almost exclusively with their daily duties, while a special representative could do much by constantly laboring with the dealers in securing orders.

Another manner in which the service might perhaps be bettered is by some official of the company visiting transfer points and making thorough examinations as to the manner fruit is handled. I dare say he would find some carelessness which should and must be remedied. There are many other ways that the fruit grower could be benefited which of course require a vast amount of labor in order to bring about.

Experience is a dear teacher but this and careful study is the means of pointing out the defects in any undertaking. With this thought in mind let us work together to better the service when possible, conferring with those having power, as the interest of the fruit grower along this line is the interest of the express company, for if we serve them they serve us in return.

THURSDAY—AFTERNOON SESSION.

The President: This morning we had several very excellent papers on fruit marketing, but we did not have time for discussion. It seems too bad to pass those up without an opportunity for at least a little discussion and if any one has any remarks to make and will make them sharp, short and pointed, we are ready to listen to any one on these topics.

Mr. Hanchett: There are a few things that I thought ought to come into our report in connection with the paper presented by our friend, Mr. Stimson, who represented the express company. In planning this marketing session, I see your secretary has been perfectly fair and has invited in not only the fruit grower, but the express company and the commission man. What I refer to is in regard to the order and commission department of the express company. Of course Mr. Stimson has presented the express company's side of it, and I think that there ought to be something of a discussion in regard to it by

the fruit growers present. We have been making something of a study of that matter up at Sparta. Of course as growers we are anxious to market our fruit in the way which would bring us the greatest returns. We have had a feeling very often that marketing them through the order and commission department of the express company was not a businesslike way of marketing our fruit. In talking on this subject with leading men of other fruit associations, I find that most fruit associations are opposed to this method of marketing fruit, and it will probably be of interest to fruit growers generally to know that there is a controversy on at the present time between the Western Fruit Jobbers' Association and the express companies in regard to this order and commission business. It looks as though there might be a storm gathering which will have to be fought out. Now, while we realize that the express company can dispose of fruit sometimes, to good advantage in limited quantities, I feel that the indiscriminate use of this order and commission department is very unbusinesslike in the extreme. Our manager, in this past year, has kept careful record of the order and commission business done by our association in comparison with the other business done and I would like to call on Mr. Richardson to give a report of that comparison to this meeting.

Mr. E. A. Richardson: In our work this year we had to keep track and make an account of every case that was turned over to the manager and a great many of our growers who had always been shipping through the order and commission department of the express companies felt as though they did not like to cut that out, so at the end of the season, when the season was over and they had received their money, we made a tabulated statement of the prices received every day, which we had to do in order to get our average, also the prices received from other departments and shipping through the express company order and commission department. I will give you a brief summary of a part of the statement as I made it out. On June 7th, we shipped 4 cases of grade "A" strawberries through the order and commission department of the express company which netted \$1.78. On that same day we shipped also 16 cases—while there were 16 cases, only about half of them, there were 9 cases that were shipped to other parties, but part of them were lost in transit, so the total average on that day was \$1.32. So you see there was quite a percentage in favor of the order and commission on that day, the total average includes an average that we received from the order and commission. Then following from that day, the next day we shipped 21 cases which averaged \$1.70 a case through the order and commission and our

general average on that day was \$1.89. On June 9th, 7 cases, averaged \$1.60 through the O. & C. and \$1.91 was our total average. June 11th we shipped 88 cases through the express, averaging \$1.42, and our total average was \$1.63. June 12th, we shipped 43 through the express company, averaging \$1.33, total average, \$1.64. June 14th, 3 cases, \$1.79, total average, \$1.78. The O. & C. had the advantage that day of one cent. June 15th, — cases, \$1.49, total average, \$1.78. June 18th, \$1.32 against \$1.41. June 20th, \$1.22 against \$1.51. June 25th, 11 cases, averaged \$1.33, through the express, and \$1.16 was our general average. June 25th we shipped 124 cases, we only shipped 11 cases that day through O. & C. June 26th, we shipped 31 cases averaging \$1.32 through the O. & C. and \$1.06 was our general average. June 26th, our season is running along toward its last, we shipped on that day 610 cases. That completed the shipments for that grade through the O. & C. department this year. We also shipped red raspberries, black raspberries and blackberries which ran on about the same average, there is anywhere from 5 to 25 cents in favor of our general total average over the express company's O. & C. shipments. I have the statement here, but it is useless to repeat it at this time, unless called for. We feel now that we have demonstrated to your satisfaction that we can make more money by shipping the stuff ourselves, finding our own market, than we could to peddle it through the express company and letting them hunt the market for us.

Mr. Daub: In 1904 our association decided to take up the matter of disposing of the crop through the express company's order and commission department, and they were almost unanimous in favor of the method, excepting the speaker and he said "Gentlemen, we can not do it, it will be a failure," and I left them and I went and hunted up my own market and it proved to be a failure before they fairly got started. They sold some of them at a fairly good price, but it was an utter failure, when they could receive for their berries upward of one dollar, they received only 65 to 70 cents, the whole market was glutted and they could not do anything. At that time I was right at Duluth at the commission firm's office when they received a message from the secretary asking if they could not make some arrangement and we took up our old method again. It was against the grain of every one of those members, but they tried it and conceded that it was a failure, it was the wrong policy to pursue, our advantages are all on the side of freight and refrigerating and I should advise any one never to try that plan. Where they have to be transferred I use the express company at times when

I have to do it and it is the best method there is, but don't under any circumstances endorse that method where you can have refrigerating freight service.

Mr. Hanchett: I think we have an illustration of the dangers in this manner of marketing fruit. Sparta and Eau Claire are the leading fruit centers of Western Wisconsin. If the express company is allowed to do an indiscriminate order and commission business west, the agent at Eau Claire and Sparta would be shipping into the same towns at the same time without the proper knowledge of what the other officer is doing. We find towns handling and selling ten cases of strawberries getting twenty cases. Now, Sparta and Eau Claire are not the whole of it, there are plenty of other stations shipping fruit, not on so large a scale, but supposing that we are doing this order and commission business, what would be the result? The market would be completely slaughtered. We found this, that we came into competition in South Dakota and Southern Minnesota with Blair, in Nebraska. The prices which the dealers told us they could get blackberries from Blair, Nebraska, were the same on 24-quart crates that we were asking on 24-pint crates. We did not quite understand the situation, but it was my pleasure to be in Blair, Nebraska, some time ago, and I called on the leading firm, McCormick & Kuthman and it seemed that they were shipping the entire fruit crop at that point and they had been doing it through the order and commission business. I asked Mr. Kuthman if he considered it satisfactory, and he said no, they would not do any more of it in the future. This is pretty generally the sentiment that I have found in communities where fruit growers wish to do their business in a businesslike way. There is this about it, at a fruit center that has built up a business in a businesslike way, we can spend our money advertising and building up a market, we can work at it for years and the express company will accept the fruit of a lot of ignorant men who simply know how to raise it, they will destroy us in one week, we will be stripped of all the fruit of our labor for years almost instantly by that manner of doing business. That is the reason why I did not want the paper presented by the express representative to go into our report without being challenged somewhat.

Mr. M. S. Kellogg: I take issue with our good friend from Sparta in saying that these poor ignorant fellows know how to grow strawberries; they have not learned the first principles of growing strawberries if they take the express companies as a means to take care of their strawberries. Sometimes they find it necessary to send a few cases off through the express com-

pany, that method has been tried up through our section by some growers, but never has it given equal returns to what the local market would have done with an equal amount of intelligence and brains used in marketing fruit on the local market. Another matter in connection with handling the business by express that is of no small importance is the fact that if a man is known in his locality and ships in many berries, he can secure any accommodations from his local express agent and the local express employes. There is no question about that, but the trouble comes on with the men, not those who load the cleated crates, but the men who receive them. I speak from experience, as I have seen berries loaded on express trains at Janesville, when the express agent would throw the crates anywhere from eight inches to two feet to get them into the position that he wanted them in and any attempt to remonstrate with him was met by either insulting remarks or a slight invitation to go somewhere else and mind you own business. I know that complaints have been sent in to headquarters for this cause and that man found his job entirely gone or he has been transferred to some other run, and I think these matters are such as the fruit growers are interested in and the express companies ought to be interested in.

Mr. Daub: I want to make one exception, and that is blueberries, you can ship and handle blueberries, but strawberries are out of the question.

Mr. Richardson: In handling fruits we send out a great many orders for blueberries and we ship quite a few and some of our members, when we got to the crop of blueberries they drew away from them, and the fact was, we had to go on the market and buy the blueberries, so we bought quite a good many and got orders and what we did not get orders for we sent on to commission houses and we send a few of those berries, just the same, on order and commission and we invariably got left on them. Our blueberries averaged \$1.63 per case of 16 quarts.

Mr. Loeffel: This is a very important discussion. The express companies have done in their time a great deal of good and after listening to that paper this morning, they propose to do a great deal more good; all that is in consideration of you people paying to them express charges, they are going to act as your correspondents, they are going to act as your distributors, they are going to act as your commission merchants wherever you want them to act and they are going to prevent the creation of a large and gigantic trust that might in the course of time entirely beat or rob the poor growers out of the saving that they may realize out of their goods. Now, I think such a boon as

an express company ought not to be talked against, as you have been doing. At the same time, there are things that we ought to ask the express company to do, and continue to do and to do that properly. There have been complaints about conveying berries from one station to another, the berries were in good condition at the time they were delivered to the express company, but they were poor at the other end of the line. Now, would it not be nice on the part of the express company if instead of doing all these various things they would handle those berries nicely and deliver them to their destination in good condition? Another thing, if instead of going and being such a great benefactor to the growers they would revise in some instances their rates a little bit better, then the growers would be justified in attending to their own correspondence, they would be justified in attending to their own placing of orders and would be even in a position to give a man that tries to make a living honestly at some principal point a little profit for filling his order or disposing of the goods that they may entrust to him. Now, express companies have been, by the Interstate Commerce Act recently passed, created a common carrier. As a common carrier they ought to do their business properly and rightly and ought to be satisfied with being a common carrier, but if they are a common carrier and if they monopolize the fast transportation that the railroad companies can give, that is the transportation on passenger trains, they ought not to enter and become a competitor for a legitimate business that has long been established in this country. Let them continue as a common carrier and let their rates be just, let them do that. They try to tell us of so much that they are going to do and the very thing that they ought to do they do not do properly. I know there are some of the express agents that are just as conscientious as any one. Mr. Taylor, of the American Express Company, is a good friend of mine, and he realizes that in transportation a great deal of work has to be done. He succeeded through refrigerator cars from Louisiana points and Mississippi to have berries come to Chicago nicely. I give credit to Mr. Taylor for his effort, he has done a great deal, so that we may have a through service from Florida to a northern point. These goods formerly were loaded in Florida, transferred from one train to another in transit and when dumped on the Chicago market were hardly recognizable and although they were grown in the winter time when fruit was high, they did not pay. This morning we heard a man say that he approved of specialism, that the Lord came to redeem the world, now He came with one special object, to redeem the world.

Now, let the express companies do that one specific thing for which they are here and not encroach on the banker's business and on the merchant's business and also be a common carrier.

YEAR'S REVIEW.

BY A. C. BENNETT.

From Report of Wisconsin State Cranberry Growers' Association.

In reviewing the events of the past year we must all realize that a new leaf has been turned over. A new mile stone has been passed. That a new history in the cranberry industry is being put on the stage. Old things are passing away, behold all things are new. Cranberries have become a cash article at last and to remain so forever.

Under the leadership of experienced salesmen in limited numbers the crop of Wisconsin cranberries has been more evenly distributed than ever before.

Through the united efforts of A. U. Chaney and the Wisconsin Cranberry Sales Company, we have secured in the name of the Wisconsin Cranberry Sales Co. a reduction in railroad rates to California of \$40 on every car of 200 barrels.

\$72 for every car to all northern Pacific points.

\$60 per car to Winnepeg.

\$12 per car to Minneapolis.

\$24 per car to Milwaukee and Chicago.

This means so many extra dollars in the pockets of Wisconsin growers. It also means a vast territory opened up to us in which we had never before been able to sell our Wisconsin berries. When we get low rates to Chicago it means that we get Chicago rates from there to a vast territory thickly populated and rolling in wealth whose appetites have longed for years for a taste of Wisconsin berries but owing to railroad rates they had to accept of eastern berries entirely. Now they have had a taste of Wisconsin berries and say they like them.

Our berries have gone east to Grand Rapids, Mich., and to Terra Haute, Indiana, northwest to Winnepeg and southwest to Dallas, Texas, and all along the Pacific coast, Los Angeles, Seattle, Tacoma, etc. Our last and best sale or highest price was obtained in Kansas, where our competitors advertised us the most.

What more could we ask?

By our contract with A. U. Chaney Co., they were placed under \$50,000 bonds to the Sales Company to sell the association berries in the open markets for the best obtainable market price to sell them in accordance to the laws of the states where sold, and of the United States; and that they should not enter into any combination with any other parties in violation of such laws and that as fast as the berries are sold that a duplicate bill shall be forwarded to the secretary of our association all of which has been faithfully performed to the letter. A. U. Chaney Co. were to do the collecting, advertising, telegraphing, remitting and bear all expenses of selling and receive five per cent. of the net returns at our shipping point and not five per cent. on the gross sales including freight, cartage, and exchange, as other commission men always do. This item alone saved the association over \$2,000; add to this the saving in railroad freights an average of \$40 a car, amounting to \$6,400, which A. U. Chaney Co. and the association saved the growers by such reduction and added together, the growers have saved \$8,400 on these two items; add to this the increased price by reason of the enlarged territory in which to sell the berries which count it \$1.00 per barrel, makes a grand total of over \$42,000 saved to the Wisconsin growers. A. U. Chaney Co. sold for cash and promptly returned to each shipper by check or draft eighty per cent. of the collection. And by the contract they are also to settle the balance with the association whenever the board of directors require them to do so. Could we ask for anything better? Out of this 20 per cent. we are to pay A. U. Chaney Co. five per cent., also pay them back the money advanced by them for labels and stamps and six per cent. interest, the necessary expenses of the association at this end such as inspection and officers. The association is to pay also back to each member the ten dollars advanced by them and replace it from the two percent. reserved for necessary expenses, the balance belongs to the growers. Under our revised contract there is no pooling nor any evasion of any laws and any fool of a politician that would turn us back to the ungodly thieves that used to slaughter our berries for the commission ought to go and hang himself.

One beauty of our Sales Co. is that different varieties can be shipped in the same car and different priced berries from \$4.00 to \$11.00 per barrel no matter who raises them, each barrel bears the number of the grower and as soon as they are loaded in the car the business of the grower ends at his own station.

In this way small lots can be shipped at car load rates and the

jobber get a variety in price and quality to suit his trade and in times of shortage on cars we know the volume of the business and the agent can order them ahead, otherwise we might have been till mid-winter shipping this year.

Owing to the larger territory to sell in and the thorough distribution of the fruit, avoiding over-loading any one market and without producing gluts and stagnation anywhere, A. U. Chaney Co. not only sold all the berries of the Wisconsin Sales Co. without the loss of a single dollar of bad accounts but also sold nearly 300 car loads of Cape Cod berries. In so doing he prevented them being piled up directly in our pathway and secured good prices for them as well as our own and our association today, though less than a year old, has a record of being the boss Cranberry Sales Co. of the world and best of all we have not had the least desire of evading any of the laws of the states or of the United States. Our aim has been from the first, to give everyone a square deal and to raise the standard of Wisconsin Cranberries, believing that the American people would approve our efforts and be willing to pay a fair price for a good article which they did and we appreciate it. We have labored under untold disadvantage this season with inadequate store-room, short on curing boxes, short on help, having to install many new cleaning and grading machines to be run by gasoline engines which often proved very balky in the hands of inexperienced men, sometimes short on cars, and lastly short on barrels but we are all alive yet and fully determined to improve the quality of our berries in every way possible and to be fully prepared another season to give our patrons the full worth of their money.

1. We need first of all inspectors that can devote fully ten hours every day in the "picking" and "packing" season to the exclusive business of inspecting, not only the berries, but the warehouses during the picking time and to insist on a free circulation of air in all cases while the berries are being cured.

2. To see to it that no berries be packed wet.

3. That some more definite rules be formed for sorting and grading.

4. That the inspectors be provided by state laws the same as the inspectors of lumber now are and having no interest in the article inspected by them.

Certain ones of our competitors seem to have been lying awake nights to devise some plan to break up this association from the first, but it can never be done by outside parties. If it is ever done, it will be done by traitors within our own ranks.

Christ in his little band of chosen disciples had one traitor but the record says that he went out and hanged himself.

We must expect some of our members to do the same thing but our Kansas competitor has not only hanged himself, but dug his own grave in advance just because we did not employ him. If we had done so at his own expense we would not have only lost all the reductions in freight rates, but we would have been paying him \$2,000 more in commissions on freight, cartage and exchange and would have been restricted to our old narrow limits to sell in, and of course would have been compelled to sell at lower rates, he would have been interested to have the railroads increase their rates and to ship them as far away as possible. Your board of directors would have been branded as a pack of fools if they had accepted his proposition. He bought berries, so I am told, in the east at \$5.50 per barrel and advertised to sell them at \$5 per barrel, and offered Wisconsin berries at \$7.25 per barrel to our customers for which he had paid \$7 per barrel. Another competitor bought some poor berries because they were cheap and advertised them at 35 cents per barrel less than our customers were getting. These scavengers do not scare us in the least. They are as necessary as the buzzards in the south that live on carrion. The association berries have all been sold at a better average price than outside parties obtained and collections were made without the loss of a single dollar on bad accounts and the growers received the benefit and this was done in the face of the fact that there was a very large crop of apples, estimated at 36 million barrels, and the most generous amounts of all other kinds of fruit all over the country and a big cranberry crop, all of which brought fair prices. Last year cranberries brought as high as \$24 a barrel but outsiders got the profit not the growers. What more could we ask in a year like this?

Year by year all kinds of fruit are being put up in better condition; in more attractive packages, shipped under more scientific management. All large dealers, even in the retail business, have their refrigerators and the fruit being kept cool from the grower to the consumer, avoids the necessity of forcing unsound fruit upon the consumers. Yet some will try to do it, and the present stagnation in the cranberry market has been produced by some eastern jobbers who bought a lot of cranberries in the dirt of some growers who did not belong to any association. These smart alecks that refuse to join any association that would compel them to put up good berries and think they are making more money, the more poor berries they put in, are

deceiving themselves and blind to their own interests. If only good sound berries had been put on the market the market price would have continued firm at good prices until all were sold, but a small amount of slush put on the market at a low price soon brings them all to its price and stops consumption, creates a panic and every man goes in for himself and the devil gets the whole crowd.

SOME PRINCIPLES OF ORNAMENTAL PLANTING.

PROF. S. B. GREEN, Minnesota Agr. College.

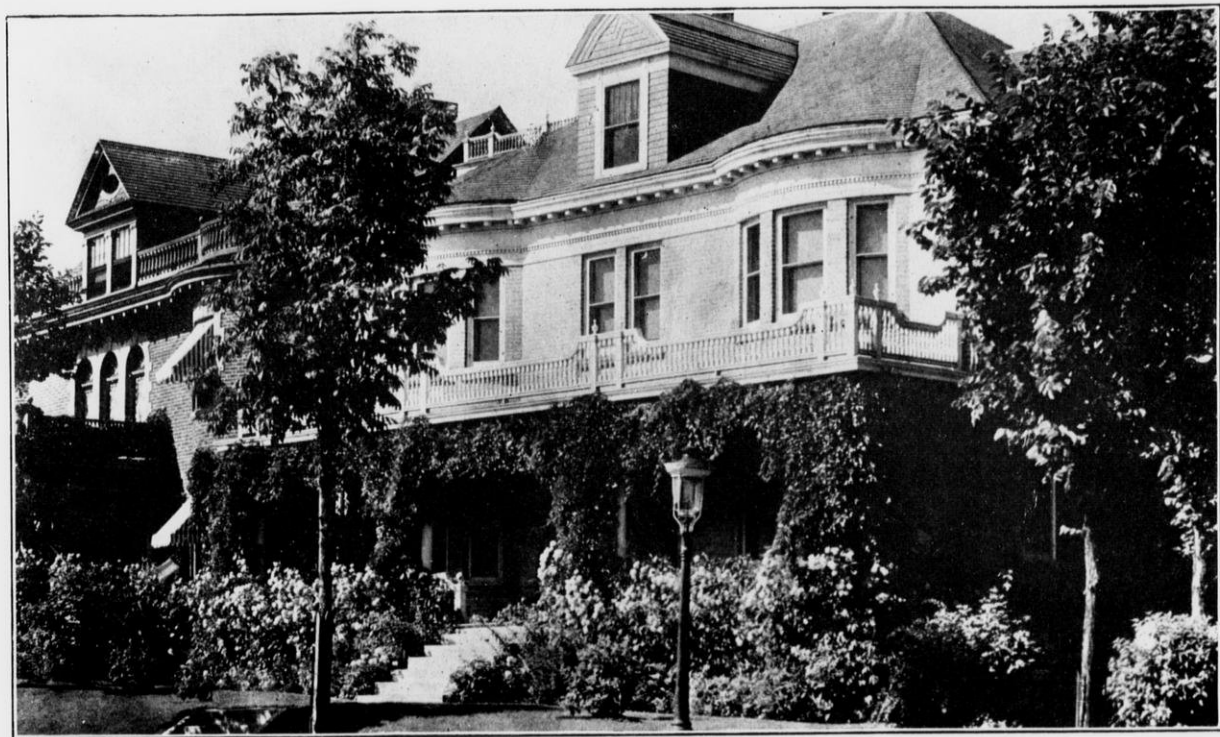
The subject which I have to present to you this afternoon is one that does not in the least concern the question of low freight rates or best methods of marketing or growing of crops, but on that account it is none the less a strong subject, and I believe when regarded in its fullness as related to the life of every one here, it will be found to be a matter of great importance.

I am going to talk to you about the value of the aesthetic as applied to landscape decoration. Please don't think of this subject as something only fitted for dilettantes, for it is something that is well worthy of the highest and best that is in you, as it has in all ages past occupied the attention of the brightest minds.

Pliny defined the aesthetic as being the "splendor of the truth". Levoque defined the beautiful as being "a force moving with all order and power". But I like Haven's definition best of all. He defined the beautiful as being "the manifestation of the hidden spiritual nature in a material form".

Viewed at from these standpoints, it partakes of divinity itself.

There are a number of distinct types of ornamental gardening. The common style in the older civilizations was what is known as the *formal*. This was largely artificial, and the gardens and walks were largely laid out on geometrical lines and were graced with statuary and formal balconies and railings. Such a form of gardening is very proper about large buildings, but does not fit well into our ordinary surroundings. A good example of this style of gardening was shown at the Columbian exposition in Chicago and the Louisiana Purchase exposition in St. Louis.



Admirable combination of trees, shrubs and vines for a difficult subject.
The above and following illustrations from photographs furnished by Prof. S. B. Greene. St. Anthony Park, Minn.

The form of gardening which is most popular in this country is known as the *natural* or *English* syle. It consists of so managing of plantings as to fit them into natural surroundings and imitate in them the best that nature does when left to herself. This is the kind of gardening that is generally used in the parks of this country, although we have more or less of the mixed style, which is often used to excellent advantage.

This reference to forms of gardening would not be complete did I not refer to what is sometimes called Japanese gardening. In Japan, landscape gardening has reached a very high degree of development and certain well defined principles are laid down as controlling in it. To really appreciate Japanese gardening one must be imaginative. In this gardening the attempt is made often to represent a certain well known scene, and water is always to be found in such work—either actually or representative. Where water cannot be used, very likely a portion of the garden is arranged so as to show what appears to be the bed of a dry stream, and in Japanese gardens the streams should always come in from the east rather than from the west. If it is a pond it may be represented by a covering of sand, from which the weeds are carefully removed, and which perhaps is spanned by an artificial bridge from which a good view of the whole garden may be obtained. Quite elaborate rules are laid down for the formation of bridges. Gardens of this kind are generally decorated with stone lanterns—in which a small light is placed after dark on special occasions.

IN LAYING OUT GROUNDS.

The most important thing in laying out grounds is to have a plan that shall be sufficiently comprehensive to include the whole scheme of the location of buildings and drives and the plantings of trees and shrubs. Considerable care should be taken with this plan. It should be understood too, that an inferior plan is far better than no plan at all, and that it is very easy and inexpensive to make changes on paper but often very expensive to make them with the actual material.

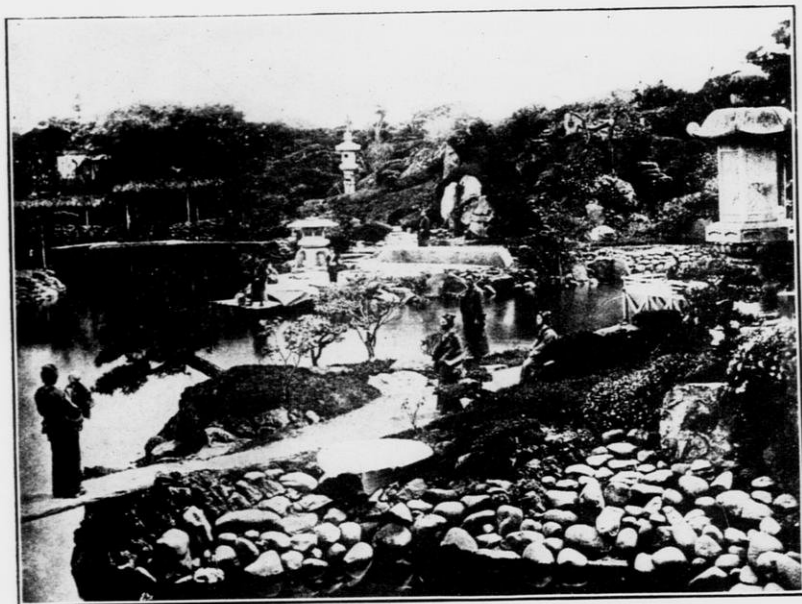
The grounds about our homes are more or less an index to our character and to our knowledge of the best use of the materials that we can command. We may look upon these grounds as a sort of a setting for the home picture. It is desirable to get the whole family interested in such work for there is nothing that holds the children to the home and excites their interest in country life as the trees and plants that they have helped to set out and care for.

The first thing to be considered in selecting a location for a home is healthfulness and the next is convenience, after which we may well take up the subject of appearance. In planning our grounds, we should consider their relation not only to our holdings, but to everything that can be seen from our location. Especial effort should be made to get good views from the windows of the rooms used the most. We should aim to cut off the view of such things as are unpleasant and to bring in vistas containing such things as go to improve life and around which cluster pleasant associations.

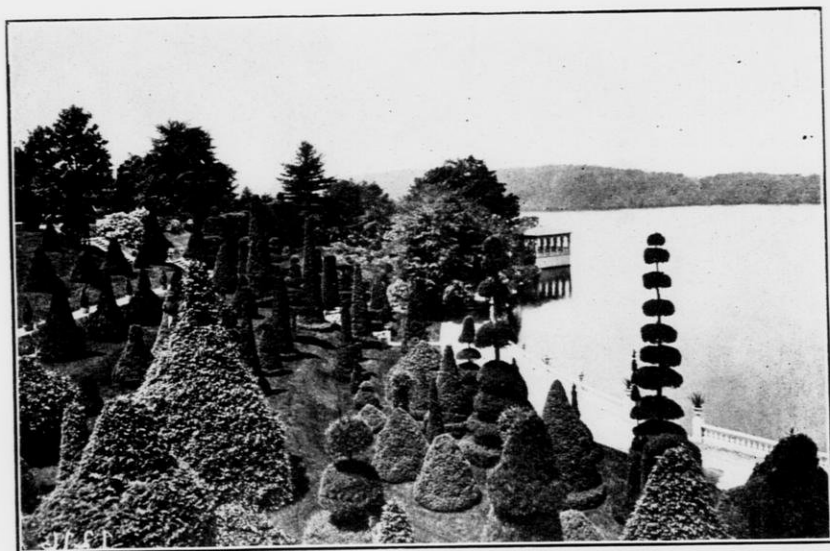
It is a mistake to lay out the plantings around a country dwelling in such shape that they cut off a view of such features as go to make rural life attractive and pleasant, and it is also a mistake to make them too small.

The value of improvements of this character are seldom appreciated, but if the matter is carefully considered, it will be found that there is nothing that we can do to our farm lands that will give us larger returns for the investment than the time and money we put into properly arranged windbreaks about our buildings. Looked at from the utilitarian standpoint, we get wonderfully good returns from suitable windbreaks about our buildings, paddocks, barn yards and gardens and they should be large enough to include all these. In figuring this up, let us suppose that there are on the farmstead fifteen cows. I think that it is hardly too much to say that the advantage it is to them in having a well protected yard in which they can take an airing in winter without too much exposure is worth at least \$1.50 an animal per winter. Then, too, there is a saving in fuel used in the house and greater comfort generally without as well as within the buildings, not only for the farm animals but for the owner and his family in carrying on the ordinary duties of life. Beyond this comes the value of the aesthetic, which is something that cannot be computed and may be priceless. Another important feature of value is the greater pride which the owner takes in a place that is properly developed. This is one of the pleasantest features of rural life.

In considering the laying out of the grounds about a city lot, I use a plan in which the front door of the house is put upon the north or west side, which is the proper place for it unless it is to go in the middle of the house, since the south and east sides are most desirable for living rooms. The path to the front door should generally be straight. If at all curved, it should curve in the direction from which the most travel comes. Do not put in a curve without making some plantings on the bend around which the path is supposed to turn. Do not



Example of Japanese gardening.



Formal style of gardening.

set the shrubs out all over the lawn, but rather keep them in groups arranged along the sides of the lawn or near the dwelling, or in places where screens are needed. The back of the lot should generally be kept open for a garden, clothes yard, etc. Put as little land as may be into walks and drives as these have a tendency to break up the lawn and make it appear small. They are also expensive to put in and to maintain. Keep the center of the lawn open and unbroken by plantings.

A few years ago, it was the fashion to make the driving portion of streets in resident districts much wider than is necessary. As a rule, a driveway two rods wide is abundant for any street in a resident district that is not used as one of the main arteries of traffic. It is better to have a large portion of the street in grass in the form of well kept boulevards than to have it in gravelly roadways which are not used and are expensive to maintain. Ofttimes, the gutters of roads are best maintained in grass.

The architecture of a house should be in keeping with its surroundings. A large and pretentious house in a quiet and secluded place is not in good taste. The estimates of the cost of a building will generally be exceeded from 25 to 50 per cent. This is especially true with those who are inexperienced in such work and as a consequence when they finally come to grading and planting the grounds about the house, they are apt to be parsimonious and not spend the money they should for this purpose. No future expenditure can atone for shortsighted saving in lawn making at this time. If the material available on the ground for a good lawn is not satisfactory, it would be better to incur considerable expense at this time to make it right rather than have the lawn made of poor materials on which grass will fail to grow successfully.

The slopes to the house should be easy and gradual. Terraces should be avoided as much as possible as they are hard to maintain and generally add little or nothing to the beauty of a place and occasionally are very unsightly. Ofttimes a very nice dwelling does not show off to advantage because the grading is poorly done. For instance, where the top of the terrace is about the height of the eye and the lawn to the house nearly level, the apparent distance from the house to the street is greatly reduced. Steps should be avoided as much as possible as they are expensive and require much care in winter to keep them clean and they are also dangerous.

PLANTING FOR SPECIAL EFFECTS.

Planting of perennial plants may be made so as to give special effects. For instance, we may plant with the object of getting a strong effect in the spring, in summer, in autumn or in winter, or in a large bed it is quite possible to so combine plantings as to secure something of interest in it at all times of the year. It is very easy to secure strong spring effects, since most of our plants flower in the spring and early summer. It is much more difficult, however, to secure good effects from summer planting while for autumn effects, we have comparatively little to work with. Good winter effects are obtained by using plants that have evergreen foliage and striking colors in bark and fruit. A bed with something of interest in it for the whole year may be made as follows:

In front we put such herbaceous plants as irises of various kinds which flower in early spring and are followed by *Baby's Breath*; back of these may come peonies of such kinds as give a succession of bloom for perhaps three weeks. Then may come spring and early summer flowering shrubs such as *Spirea Van Houttei* and other *spireas* flowering at the same time; *Golden Elder* will liven up the somber green of its surroundings all summer by its brilliant and almost golden colored foliage and its white flowers which appear in July; *Spirea sorbifolia* produces its white flowers about the middle of July when little else is in bloom; then may come the hardy *Hydrangea* whose great white panicles will be conspicuous through August and early September; *Pyrethrum uliginosum* will have white daisy-like flowers in September; *New England Aster* has purple flowers in October and *Boltonia asteroides* has white flowers during the same season as the *New England Aster* and is fine in contrast with it.

Interspersed with these plants or back of them may be planted such plants as will give a good winter effect. Among such might be included the *White Birch* and *Red Twigged Dogwood* which would show considerable contrast with some of the smaller growing evergreens like the *Arborvitæ* and *Colorado Blue Spruce*, or if the bed is larger, some of the larger growing evergreens such as *White pine* and *Norway spruce* may be used to a small extent.

Other plants will naturally suggest themselves to one who is familiar with the lawn shrubs adapted to this section and it is one of the pleasant things about such a bed that the owner can impart much of his own originality to the methods of arrange-



Profitable and suitable lawn mowers, Hyde Park, London.

ment. Of course the aim should be to have all the plants show off to good advantage and yet have them all near enough together so that they will not have the appearance of being separate, but the whole thing will appear as a mass of light and shade.

WINTER PROTECTION OF PERENNIAL PLANTS.

It has been pretty conclusively shown that most of the herbaceous plants that are hardy in New England and New York can be grown here providing they have suitable winter protection. This protection should generally consist of a mulch of leaves, straw or similar litter, perhaps six inches deep which will hold the snow and prevent severe freezing. Where these plants are covered in winter with a heavy coating of snow, there is nothing else needed, but as this is a section of rather deficient snow fall and in many places the snow blows off, leaving the roots exposed, some attention to winter protection will be found very helpful in the caring for some of our most desirable plants.

Beds of tulips, hyacinths and similar plants should be protected in winter with about six inches of mulch as recommended above for herbaceous plants. This should be covered with a few branches or something of the sort that will keep the mulching from being blown away.

In the case of tender shrubs, such for instance as *Spiraea Thunbergii*, the best way of giving winter protection is to lay the plant on the surface of the ground and cover with a few inches of mulch. Some shrubs that are stiffer in habit than this *spirea* and cannot be laid easily on the ground, are best drawn together and tied in place with soft string and then wrapped with a covering of hay or straw.

Some of our most ornamental evergreens, such as *Abies concolor* and some of the tender *Arborvitae*s should be protected a little in winter. They will often go through ordinary winters without injury but in occasional winters, they would be hurt if not protected. For plants like these which are nearly perfectly hardy, a good way to protect them is to shade them with evergreen branches or similar material. They may also be wrapped with hay.

Newly transplanted street trees and especially those that have smooth bark are liable to sunscald. Among these especially subject to this trouble are the Basswood, Mountain Ash and Soft and Hard Maples. These are often injured the first winter

after transplanting and special attention should be taken to protect their trunks by a covering of burlap or any other material that will serve to keep off the direct rays of the sun. When growing thriftily, these plants are seldom injured by sun scald but some of our best Horticulturists prefer to protect them every winter, as little labor is required to do this and it insures their coming out in the spring in good condition.

Shrubby borders should always be mulched in winter unless they are covered with a heavy coating of snow early in the winter. Many plants that are not killed by a severe winter may be so severely injured and weakened by it that they do not do their best afterwards.

TIME OF PLANTING.

For the beginner the best time for transplanting work in this section is early in the spring, although there are quite a large number of plants that do best if moved in autumn, but on account of the poor planting that is liable to be done by those who have not had experience, spring is generally considered the safest time for this work. In the case of street trees, it is well enough for those who have had experience to set out the hardiest kinds, such as White Elm and Green Ash in autumn, especially in autumns when the ground is in a moist condition. Our hardiest shrubs may also be transplanted in autumn to good advantage, but those that are somewhat tender should be left until spring. With herbaceous plants, the experienced horticulturist will get his best results from autumn planting providing the soil is in good condition. This is especially true of Peonies and Irises.

Some of our best nurserymen recommend buying in autumn and "heeling in" over winter and planting in spring. This is a good plan if the "heeling in" work for winter is well done. If poorly done, there may be great loss under such conditions. I am inclined to think that it is about as well to set out the stock where it is to grow, especially if the plants are small and bend to the ground and cover them, tops and all, with earth and afterward with a little mulch. This practically amounts to "heeling in" each plant separately where it is to grow in the spring of the year. Such a covering should be removed as soon as the plants show signs of starting in the spring.



Elms Hyde Park, London.
"As it should be,—the grass is worn out but the children are having a good time." Prof. S. B. Greene.

REPORT OF FINANCE COMMITTEE.

IRVING SMITH, Chairman.

Your finance committee are pleased to report that we have gone over the books and accounts of the secretary and treasurer and find same to be in good form and correct. We wish, however, to mention a few points where we think some improvement may be made, and we have brought before the executive board the fact that quite a number of the expense bills turned in by members for attending meetings, visiting trial orchards, etc., are not sufficiently itemized. At our recommendation that body promptly passed an order instructing the secretary to demand itemized bills of all parties having claims against the society.

In our work we have examined every bill, gone over every addition and have found nothing to give the slightest ground for suspicion. We do therefore, heartily commend the work of the executive officers of the society.

Respectfully submitted,

IRVING C. SMITH.

J. J. MENN.

M. V. SPERBECK.

Finance Committee.

On motion, the report of the finance committee was accepted as read and ordered placed on file.

On motion of Mr. Toole, the report of the treasurer and the financial report of the secretary were accepted.

ELECTION OF OFFICERS.

The President appointed the following nominating committee to make selections for the executive committee: Messrs. W. H. Hanchett, D. E. Bingham and H. Melcher.

The President appointed as tellers Messrs. Bingham and Johnson.

Nominations for president being declared in order, Mr. Tip-lady nominated Mr. R. J. Coe and Mr. Philips nominated Mr. George J. Kellogg.

It was moved by Mr. Johnson that the first ballot be made an informal ballot. Mr. Riegel moved as a substitute that the first ballot be a formal ballot. A rising vote was taken and the substitute carried, ayes 37; noes 20.

The result of the ballot was as follows: Total number of votes 78; George J. Kellogg, 27; William Toole, 2; Dr. Loope, 1; R. J. Coe, 48.

Mr. Coe having received a majority of the votes cast, was declared duly elected.

The following were nominated for vice president: Irving Smith, W. H. Hanchett, and D. E. Bingham. The ballot resulted as follows:

Total number of votes cast, 63; necessary to a choice, 32; Mr. Hanchett received 29 votes, Mr. Smith 20, Mr. Bingham 23, Mr. Melcher 1.

There being no choice, another ballot was taken, resulting as follows: Total number of votes cast, 73; necessary to a choice, 37; Mr. Hanchett 37, Mr. Bingham 13, Mr. Smith 23. Mr. Hanchett having received a majority of all the votes cast, was declared elected.

The election of treasurer being next in order, Mr. George J. Kellogg placed in nomination Mr. Franklin Johnson. Mr. Johnson declining to serve, Mr. Hanchett moved that the secretary cast the ballot for Mr. L. G. Kellogg, the present incumbent, which motion carried and Mr. Kellogg declared duly elected.

The nominating committee submitted the following report:

MEMBERS OF EXECUTIVE COMMITTEE.

First district—William Longland.

Second district—Prof. E. P. Sandsten.

Third district—William Toole.

Fourth district—F. W. Harland.

Fifth district—H. C. Melcher.

Sixth district—L. A. Carpenter.

Seventh district—A. J. Philips.

Eighth district—M. E. Henry.

Ninth district—D. E. Bingham.

Tenth district—A. E. Bennett.

Eleventh district—C. L. Richardson.

On motion of Mr. L. G. Kellogg, the report of the committee was confirmed.



Mixed border planting.

REPORTS OF DELEGATES.

REPORT OF DELEGATE TO IOWA.

WILLIAM TOOLE, Baraboo.

The hearty welcome extended to your delegate by the officers and members of the Iowa State Horticultural Society at their annual meeting in Des Moines, December, 1906, was a pleasant expression of the good will of the Iowa horticulturists to the Wisconsin State Horticultural Society.

The first thing to attract attention at the state home where the meeting was held was the grand exhibit of about two thousand plates of apples and other fruits which were mostly of varieties not adapted to Wisconsin. The two most extensive individual exhibits were those by F. O. Harrington of Williamsburg and J. W. Murphy of Glenwood. Of special interest to me was the showing of apples by C. H. True of Edgewood as he had a very fine collection of apples from N. E. Iowa, where climatic conditions are probably nearly the same as in southern Wisconsin. From appearance of the Stayman apple and accounts given it might be worthy of trial in Wisconsin. Nelson Sweet is considered by Mr. Harrington to be the best winter variety of sweet apple and hardy with him. The Northwestern Greening was much used in exhibits to show contrast with the bright red varieties. Much fault is found with this variety because of tendency to rot before ripening and not proving acceptable in quality to most customers.

A very interesting exhibit was a showing of results of spraying done under direction of Prof. J. W. Jones, who has charge of the horticultural extension work of the experiment station at Ames. The work was done in private orchards and the results were strong additional proof of the value of spraying against scab, codlin moth and curculio. Very cordial relations seem to exist between the horticultural division of the College of Agriculture and the State Horticultural Society.

The reports of directors from different sections were of large fruit crops in all parts of the state, although small fruits and cherries had been quite variable. Nothing special was brought out in regard to varieties or cultivation of small fruits. The so-called 'pedigree plants' is considered mainly an advertising expression. In orchard management a blue grass sod retards growth, which may sometimes promote fruiting which has been delayed by a too vigorous growth. Where soil is rich, clover turned under retards fruitfulness, but in other situations is beneficial. Pasturing with shoats is helpful if rooting is prevented. In discussion the general opinion was that very little injury is done to orchards from the rust passing from red cedar. Charles Potter told of some valuable results from crossing the Rockford with other varieties of plums.

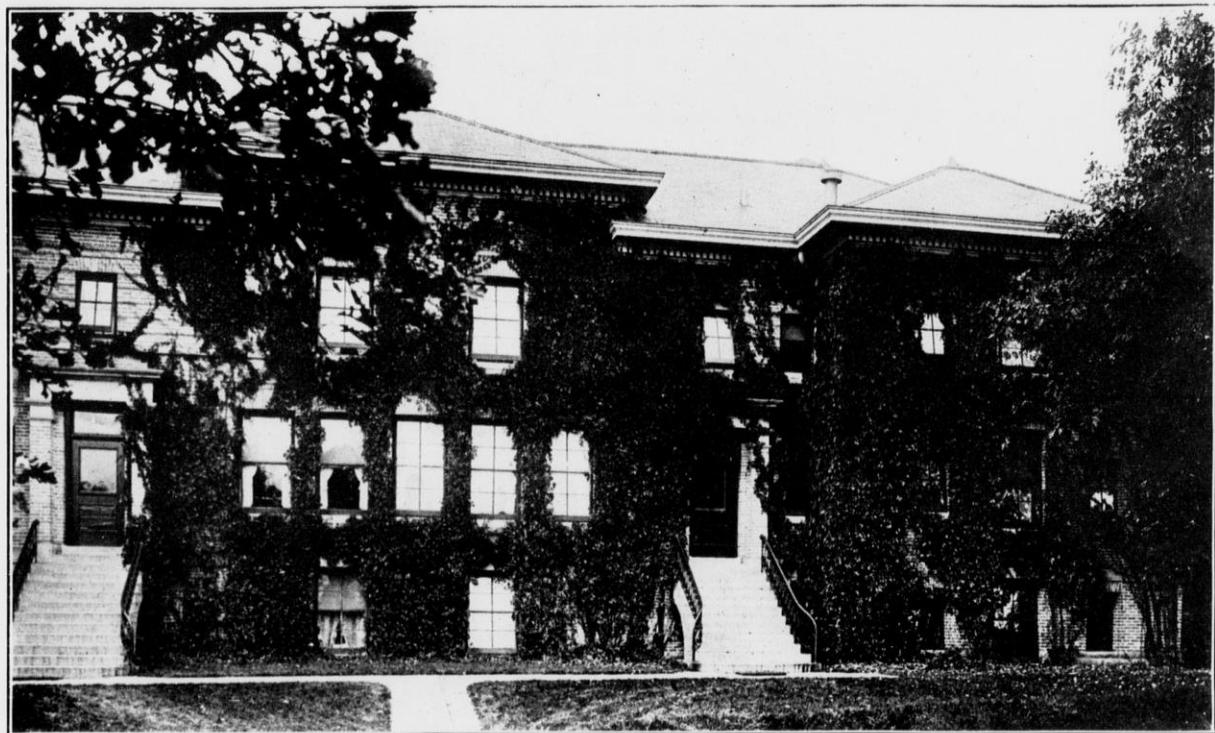
C. L. Watrous made a strong plea in favor of raising new seedling varieties of fruit which was in line with the movement of the society to organize a plant breeders' association. Organization was effected to the extent of electing temporary officers and enrolling names of members.

H. J. Eustace talked of experiments with cold storage of apples. It was then too early in the season to give results, but it is established that fruit for cold storage must not be picked too immature and should be cooled off before being placed in storage. Bruising must be positively guarded against and it will only pay to store first class fruit. Discussion at another time agreed that placing apples in pits is not satisfactory.

Following a discussion of Prof. Beach's talk on spraying a resolution was adopted instructing the legislative committee to secure the passage of a law forbidding the sale of impure Paris Green or other drugs used for insecticides, as much loss has resulted from using Paris Green of such poor quality as was bought from the dealers the past season. The most active members of the society were much interested in having at least one of the society's members hold a place in the State Board of Agriculture. The position was secured for the treasurer, Mr. Elmer Reeves of Waverly.

At one of the sessions Secretary Greene gave the opinion that election of officers should be held at some time independent of any program, as often plans for the good of the society brought out discussions which were not understood by the general public and not of interest to them.

The banquet tendered to the members by Secretary Greene was a very enjoyable occasion. At one of the meetings next day it was moved to appoint a committee to plan for future banquets at the expense of the society and its members instead



Englemann form of Virginia creeper. Valuable for covering brick and stone.

of permitting Secretary Greene to bear the expense. The thoughts expressed in the toasts given showed an intense state pride and a spirit of promoting state interests. With such a spirit prevailing and with her natural resources Iowa will continue to be among the foremost of the great states of this nation.

Your delegate returned home with the hope of at some future time again meeting the kindly, genial, hospitable horticulturists of Iowa.

REPORT OF DELEGATE TO NORTHEAST IOWA.

H. C. MELCHER.

The territory comprising the Northeast Iowa Horticultural Society includes about one-fourth of the state. This is subdivided into four districts and a director appointed for each district. It is the duty of each director to report the condition of his district to the annual meeting in regard to past conditions and future prospects. At the present meeting the number of directors was increased to six and the districts will be arranged accordingly.

At a gathering of horticulturists in Charles City twenty-one years ago the remark was made that there were only four apples that could be depended upon in Northeast Iowa, these being Duchesse, Tetofsky, Wealthy and Whitney No. 20, the latter being a crab. As a result of the discussions that followed, the Northeast Iowa Society was formed to see what could be done along the line of growing hardy apples. As a proof that they had succeeded, they pointed with pride to the magnificent display of fruit at the present meeting. This was a revelation to most of those attending the meeting. Here could be seen about thirty varieties, mostly winter apples and including many of our own Wisconsin natives, such as N. W. Greening, McMahan, Wolf River and Pewaukee, and grown to such perfection that they would have to be considered in any apple show.

The first session was practically a meeting of "The Old Guard"—most of those present having been members since the society was organized. The reports of the directors showed that it had been a very ordinary year. Large crops of strawberries were raised, but as Iowa had a wet year, the quality was not of the best. Raspberries a good crop with fair prices. Currants are being neglected and practically no replanting be-

ing done, while blackberries were not even mentioned. Plums and cherries a good crop but prices not very satisfactory. All agreed that the grape crop was the largest and best ever raised in northern Iowa.

The apple situation is much the same as in Wisconsin, the summer and fall varieties bearing heavily, while the winter varieties had a very light crop and were reported as not keeping as well as usual. One director reported N. W. Greening badly affected by what he called sun-scald and were at that time half rotten.

Immediately after the report of the directors, President C. G. Patten gave his annual address which was a review of the work of the Society since its organization, and was full of hope for the future.

The paper, "What I would advise a beginner to plant in the apple orchard," brought out the fact that they are growing about the same varieties that we are. Judicious pruning and thinning of fruit was about the only way to secure successive crops of apples. This subject was handled by H. G. Patten of Charles City, and brought out the only pruning talk of the meeting by Wesley Greene who advocated late March or early April as the proper time for that work in northern Iowa. "Planting an Apple Orchard," by G. A. Ivins, was most interesting, and planting thickly with the thought of future thinning was strongly condemned. The thought seemed to prevail that planting thickly induced barrenness and that the habit once formed could not be overcome by thinning.

"Strawberry Experiences" by G. D. Black shows that Iowa growers are up to date in that department, but are at a disadvantage geographically when it comes to marketing the crop. Iowa has but few large cities where they can handle car lots, and the complaint is that the transportation on small consignments is so high as to be practically prohibitory. The varieties grown are much the same as grown here, although many growers still find the old Crescent profitable.

The president's address where it referred to plum culture and the paper, "Plums—The Present Status," by Elmer Reeves would indicate that they are at the beginning of a new era in this department and that they will have something to show us in the near future. Of the older varieties none was spoken so well of as De Soto.

"Spraying and the care of the orchard" by Prof. S. A. Beach was one of the best numbers on the program. The talk was illustrated by charts showing the benefits of thorough work along



Effect of shrubbery around a R. R. Station.

this line. The greatest trouble seems to be to get the smaller growers to take it up, and the only solution would be to have some one in each community do the work for a price.

This session was cut short to allow all who wished to visit the nurseries and packing cellars located here. Through the courtesy of President Patten, conveyances were provided and a guide furnished with each load. As the ground was covered with snow at this time, not much time was spent at the nurseries, but the packing cellars were busy places preparing stock for next spring's delivery. The new packing cellar of the Sherman Nursery Company is one of the largest in the northwest, having a capacity of 1,000 car loads.

One of the pleasant features of the meeting was the part taken by the people of Charles City. The address of welcome by Prof. Hirsch and "The Child's Study of Plant-life" by Prof. Kent being exceptionally fine.

"Door-yard Possibilities" by Ethel Waller was a strong plea to break up the monotony of the average door-yard by a judicious planting of shrubs and flowers that cannot help but benefit all who listened to it.

The program was liberally interspersed with music, both vocal and instrumental and the whole concluded with an illustrated lecture by Prof. MacBride on "The City Beautiful."

All of the old officers were re-elected with the exception of vice president, and the next meeting located at Independence.

REPORT OF DELEGATE TO MINNESOTA.

W. J. MOYLE.

December 4th, 1906, found me safely planted at Hotel Brunswick, Minneapolis, Minn., representing our society as its delegate to the Minnesota State meeting. The morning of the first day found me at the place of meeting, the First Unitarian church. I soon became aware that Wisconsin was well represented, our well known old war-horses, Phillips and Kellogg, being present. The former took me in hand and I was soon well acquainted with all the prominent members of that society.

The first session we were favored with the usual grind of horticultural topics. C. S. Harrison of York, Neb., however, stood out among them as being remarkably magnetic and perfectly at home with his subject, as well as very enthusiastic for a man of his years.

Another very unique feature of the Minnesota meeting was the introduction to the horticulturists of two prominent livestock men who undertook to show the apple-men that they knew berries and beans as well as pork and beef, viz., Prof. Thomas Shaw and Prof. Andrew Boss of St. Anthony Park.

Prof. Shaw came out flat-footed for orchard cultivation in grass for Minnesota. This jarred some of the members but as he backed up his statement with facts it could not be disputed.

Another man, Wm. S. Chowen of Minnetonka, stated that in fifty years he had planted five orchards and up to date had nothing to show for them.

The second session brought forth many interesting topics followed by instructive discussion.

The second day was largely devoted to business sessions, Prof. Samuel Green being elected president in place of Clarence M. Wedge, and to the Woman's Auxiliary, at which some very interesting subjects were presented.

Thursday found the program filled with spraying, seedling-fruits and forestry topics, many prominent people discussing these subjects.

The banquet Thursday evening was of a very high order and unquestionably the best thing on the program was the paper read by Mrs. F. F. Farrar: "An Amateur Horticulturist Under the X-Ray—His Wife Turns It On."

Friday was largely devoted to the discussion of small fruit and garden topics, interspersed with an excellent talk on "cold-storage" construction and results obtained in plant-breeding for hardiness, etc.

Taking it all in all it was a very instructive meeting. The seedling apple men were in evidence everywhere lauding up their particular apple, and I guess they are like the poor spoken of in the "Good Book," we will have them ever with us.

As to putting up a fruit exhibit they are not in it with Wisconsin, as they cannot show the variety, color or quality.

REPORT OF DELEGATE TO WINTER MEETINGS OF
ILLINOIS SOCIETY, DEC., 1906.

W. H. HANCHETT.

When I started to Champaign as a representative of the Wisconsin State Horticultural Society at the winter meeting of the Illinois State Society, the question arose in my mind as to what of value I was expected to impart to the society visited, and what of value I was to bring as a result of this visit to the society sending me in return for the expense incurred.

It was evident that I had a duty to perform or the expense incurred became a graft and I a grafter. The paper in my pocket, which I was to present as a part of the program, was, I felt, a rather poor return for the expense incurred by the Illinois society in entertaining me as its guest, and I feared the knowledge I would be able to absorb and bring back to my own society would be a very meager return for the expenses incurred in the trip.

I arrived at Champaign shortly after noon on Dec. 11th and at once repaired to the Hotel Beardsly, registered, and began to search out the arriving horticulturists, and make their acquaintances as rapidly as possible.

The first session was held at Morrow hall in the agricultural building at Urbana, at 10:30 a. m. of the 12th, and was opened by prayer, following which was the treasurer's report, the several items of which were of absorbing interest to me, in as much as Secretary Crane had informed me that our society needed an appropriation of \$8,000 to properly carry on the work of the society, and I had been pondering the subject of whether state appropriations to horticultural societies were wisely expended and were doing a valuable work for the state.

The Illinois appropriation was \$5,000. The heaviest items of expense were the annual report, costing about \$1,600, and the secretary's salary of \$400, the minor items being program expenses, premiums, executive board expenses, etc.

The report showed that the appropriation had all been made proper use of and later in the meeting it became only too evident that many important matters could not be pushed for lack of necessary funds, and I became thoroughly convinced that a much larger state appropriation would have been wisely expended in behalf of the horticultural interests of the state by the society.

The secretary's report gave a summary of the financial affairs of the society, and dealt with the matter of the distribution of the report and other matters, and was followed by a spirited discussion of methods of distributing the report by the members.

The president in his annual address reviewed the valuable work that the society had done in the development of the horticultural interests of the state, the horticultural crops of the past season; cited the value of the station reports and exhibits as an object lesson and discussed the nursery inspection and urged co-operation in making the law effective against the San Jose scale.

The society next took up a discussion of the effectiveness of different arsenites for spraying, and the concensus of opinion seemed to favor Paris Green. In this connection Mr. Stanton stated that lack of any law regarding the matter made Illinois the dumping ground for all the poor grades of Paris Green on the market and urged that steps be taken to provide some means of inspection that would protect the public in this.

The principal features of the afternoon session were a paper on peach growing by Wm. Miller of Ohio, a paper on "Spraying and other items Gleaned from the Apple Crop of 1906," by H. M. Dunlap, and a paper on small fruit shipping and marketing by the delegate from Wisconsin.

The Thursday morning session was opened by prayer, followed by a discussion of the needs of a permanent Experimental Station. Other items of this session were the report of committee on awards, an interesting and instructive paper on Small Fruits on the Farm by W. R. Soverhill and a paper by Dr. Burrill on Weed Invasion which was illustrated by specimen weeds which had gained a foothold in the state.

The afternoon session contained a disappointment in that W. A. Taylor of the Department of Agriculture had found it impossible to be present. State etomologist, S. A. Forbes, gave a very interesting report of the results of the state nursery and orchard inspection which impressed me very forcibly with the seriousness of the San Jose scale and its danger to fruit interests. Professor Forbes reported that the scale had been found in 55 of the 98 counties of the state. That of the infested orchards two counties contained 40 per cent. of the infestation of the state and five counties contained 80 per cent. That 19,000 acres of orchard had been found infested and something like 40 miles of hedge. The inspection had cost the state nearly \$6,000. In the discussion that followed this report, Mr. Smythe, the delegate from Michigan, stated that the en-



A nursery row 50 ft. long of native aster, the offspring in two years of a single stool found clinging to a bundle of nursery stock. A hint to our nurserymen.

terprising fruitgrower of that state had begun to look upon the scale as a blessing in disguise as the thorough cultivator found it comparatively easy to combat and that it forced the shiftless grower who was always depressing the market with poor fruit out of the business. While this may be a good way to look upon this pest when present let us pray that this is a blessing that we will escape.

The session closed with a very instructive paper by Prof. John W. Lloyd on "Promoting the Early Development of Vegetable Crops".

The evening session was a short one consisting of a very pleasing paper by Miss Bernice L. Foster, entitled "Culture and Horticulture," and a thoroughly practical paper by Miss Hettie M. Anthony entitled "Domestic Science, its Growth and Influence". Immediately following this short programme the members repaired to the residence of Dean Davenport where they were royally received and entertained the remainder of the evening.

The session of Friday forenoon was taken up with a discussion of the growers' proportion of the selling price of the apple crop, reports of various committees, and a condensed report of the Experimental Stations by J. R. Reasoner.

This being the last session of the meeting the members scattered to their respective homes.

REPORT OF DELEGATE TO NORTHERN ILLINOIS HORT. SOCIETY.

JOS. D. TRELEVEN, Omro.

The Fortieth Annual Convention of the Northern Illinois Horticultural Society was held in the city of Joliet, December 4 and 5, 1906. Although Joliet is a city that Chicago is much interested in I found everything quiet and orderly and the city tried in every way to make it pleasant for the convention and as your delegate I was made most welcome and treated with every courtesy by the jolly Illinois horticulturists.

The meeting was held in the Assembly Hall of their beautiful Library Building which is thoroughly modern in every detail and built entirely by the city.

Joliet claims more miles of paved streets than any city of the west and high school buildings equal to any in the world.

The city boasts of a Civic Improvement Society with a large membership who are doing a good work. The Northern Illinois Society always change their place of meeting each year and I think by doing so that it is not only beneficial to the organization but to the general public as well. Mr. Thompson, the president, seems to be the right man for a leader and his good work is appreciated for he was again re-elected.

The display of fruit and vegetables was very fine. One thing which was very noticeable was the great number of red apples seen in the display. All apples were smooth and perfect, which tends to show the great benefit derived from thorough spraying as we all know the Illinois horticulturists are right to the front in this important work.

After looking over the fruit and sampling some, we wended our way to the hall. The morning session called at 10:30 a. m. and the address of welcome, response, reports and general business filled the time until the noon hour. In the afternoon three very interesting papers were presented on "Grape Culture and Trimming" and "Growing Strawberries for the Home" and "Curculio and Codling Moth". These papers were listened to with close attention and very spirited discussions followed on each subject.

The first evening's session was given over to the ladies and the programme was full of enthusiasm with papers and practical talks. There was a large audience and these farmers' and horticulturists' wives were listened to with as much interest and attention as was accorded others. I noticed that throughout the session the ladies took an active part in the discussions and that there was a good attendance at all the sessions.

The last day we were treated to a talk by Mr. Beatty of Three Rivers, Michigan, on the subject of "Growing and Marketing Fancy Strawberries". Also interesting papers on "Truck Gardening," "Renewing Old Orchards," "Currants and Gooseberries". The subject of spraying was presented by Senator Dunlap. He deems it a necessity even though we grow only a small quantity of fruit. He claimed he would have eight barrels of No. 1 apples where trees are sprayed to two barrels of No. 2 apples where trees are not sprayed. A report from one of their experiment stations showed that they had made a test on 86 varieties of plums and discarded all but four. The last evening's programme was given by the young people and was held in the lecture room of one of the high schools. The music for the evening was furnished by the students of the high school and was exceptionally fine and added much to the evening's enjoyment and was a rare treat



Tree in middle foreground nursery grown hard maple; one at right seedling taken from woods nearby; planted same day and practically equal in height and diameter, the one on right (woods) being a trifle larger. Photo from H. F. Marsh, Antigo, Wis.



Wealthy planted 3 years. Sunny Side Fruit Farm, Antigo, Wis. W. H. Marsh, proprietor.

and a real pleasure to all. Addresses were given by the State Supt. of Schools of Illinois and by Dean Davenport of Chicago University which were very instructive.

I thank the Wisconsin Society for sending me as a delegate for I had a very pleasant, enjoyable and I trust instructive time.

REPORT OF DELEGATE TO MICHIGAN HORTICULTURAL SOCIETY.

D. E. BINGHAM.

As delegate from this society to Michigan, I have a short report to make. This report is not short because of a lack of good things to report on, but simply for lack of time. Our program is full and therefore I will only attempt to give you a few of the many good points I got while at this meeting. Michigan's fruit interests are large, many individual growers using more Blue Vitrol than the whole state of Wisconsin for spraying purposes, and there was just such men at this meeting, and of course many growers, like our Wisconsin growers, learning and anxious to learn more. I will not attempt to go over the program and mention the good things in each paper, but will simply say that the whole program was right to the point and carried out to the letter. Our meetings were all held in the Bell Opera house and were called to order promptly at the appointed time. The next door to the opera house was a vacant building which was used during the meeting as a fruit display room and also for showing the different styles and makes of power and hand sprayers. This room was always closed while the meeting was in session and in this way all attended the meetings, giving the meetings a very large attendance.

The fruit display was very good.

The most important topics under discussion this year in Michigan were the October freeze and San Jose scale, both of which hit Michigan pretty hard. The topic of San Jose scale was handled in a way that shows very conclusively that Michigan can hold her own even against this insect pest.

The October freeze did untold damage to young orchards, many pulling their's out, others cutting back where trees were young enough.

It would take more time than I have now at my disposal to

tell you of all the good things that were on the program, and therefore I will end my report by saying that I found a real, live, earnest lot of horticulturists at Benton Harbor. I was royally entertained, enjoyed the meeting every minute and feel that great good cannot help but come from such gatherings and discussions.

After a recess of five minutes, the president introduced to the society the visitors and delegates from other states.

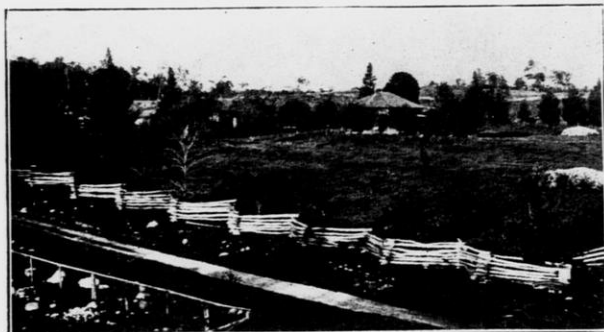
Mr. A. W. Bryant (delegate from Illinois State Society): It is a great pleasure to me to have the privilege of meeting with the Wisconsin horticulturists. My home being in the northern part of the state, we realize that our problems in fruit growing and orcharding are much the same as yours here, varying perhaps only in degree and we all know that there are general problems in the horticultural world that we can all help solve and I hope to absorb much from your meeting. It is hardly to be expected that you will get very much from me, but if I can be of any assistance at any time I shall be glad to be called upon. I hope to go back to Illinois with a great many good things.

Mr. R. K. Lemmon (Iowa): I am like the other gentleman, I did not come here for the purpose of teaching, in fact, I know that I cannot teach, I expect to learn. I know that our society has gotten many good things from Wisconsin. Secretary Wilson is an Iowa man and when at Washington he was speaking of the agriculturist, he said that those men that have taken up fruit growing as a specialty are far above the average in energy and intelligence, and I do not think any man can be in this meeting very long before he realizes that Wilson knew what he was talking about. I am glad to be with you and I hope to learn much in this meeting.

Mr. C. H. True (N. E. Ia.): I may say that I am glad to find myself today realizing what for a number of years I have hoped for, and have looked forward to and that is the pleasant privilege of meeting the Wisconsin horticulturists as I am meeting you here today. I need not tell the people of Wisconsin what we are doing in down in Iowa in the way of fruit growing, etc., because quite a number of your members have been with us at different times, both in our district and in our state societies. I might name half a dozen that are present here today that have been present with us at different times and you



Block of N. W. Greening, Sunny Side Fruit Farm.
3000 trees, W. H. Marsh, Antigo, Wis.



General view, Sunny Side Fruit Farm, 3000 trees,
W. H. Marsh, Antigo, Wis.

all know the very cordial and kindly feelings that have existed between fruit growers of Wisconsin and Iowa for many years past, and I want to say that while I am here in part for pleasure, I also present myself for service and I shall appropriate the very kind invitation of the president in saying that visitors should feel themselves perfectly at home and I am already enjoying very much this pleasant meeting.

Mr. J. H. Turner (N. Ills.): I fell like Mr. Bryant of our state society, that I am here more to learn than to instruct.

Mr. E. Hutchins (Mich.): Mr. President and members, it always gives me a great deal of pleasure to meet with aggressive, progressive, intelligent, enthusiastic horticulturists. I feel at home among that class of people. I may say I have been particularly interested to meet you people here. Every summer we ship our Duchess apples to Chicago and when we are shipping the last lot, the price usually drops and the market reports state that the market is liberally supplied from Wisconsin, and as I have been along up and down South Water street, I have seen as nice batches of apples as I ever saw in my life that they told me came from Wisconsin, and I have been quite interested in meeting men who grow such nice apples. I do not know, Mr. President, but I am getting myself into a little dilemma in saying this, for we grow some nice apples in Michigan and people sometimes get reports mixed and if I am not careful, when I get back home the report will come there that I have said that I saw some of the nicest apples that I ever saw, and some one will ask me where I have been in my state. I will just simply say that those Duchess apples were as nice as any Duchess I ever saw. I will have a little more to say along this line perhaps later on. I want to say this, I have been very much interested indeed in the reports I have heard from your local societies and the fine work you are doing and I have already learned a great deal. I only hope that I may be able in some way to make some little return for all I am getting and expect to get out of these meetings.

Mr. John Howard (Minn.): I am only an amateur in this business and I have little to say this morning, but I am glad to be with you and I hope you will have a good meeting. I am already interested and hope to get more knowledge.

Mr. Roy Underwood: I come from Minnesota also and know Brother Howard pretty well. I know he is very modest; we are very fortunate up there in having Mr. Howard represent us. He is one of the most practical and successful growers in our state. While others have been growing experimental orchards, Mr. Howard has been building up a commercial or-

chard and if there is anything you want to know about our commercial orchards, Mr. Howard can certainly tell you, if any one can in Minnesota.

Prof. Blair (Canada): I did not come here for the purpose of making any speech, in fact, I had not thought such a thing as being called on formally this morning. I come from that northern country, Canada, from the province of Quebec. I might state briefly that I am interested there in McDonald College that is being erected at Montreal by Sir William McDonald, a man who has seen fit to put some five million dollars into an institution that will develop knowledge of horticultural work, devoted entirely to that purpose. That institution is now in the course of erection and I have had so far charge of the horticultural work and am trying to pick up some ideas, find out something that will help us in our work in connection with horticulture. I might say, when I come amongst you as fruit growers, that I feel at home, because I know you are working along the same lines that we are and there is that brotherly feeling that we know exists among all horticultural societies and horticultural people. The program that you have here will certainly interest me, because there are many things on that program that are along the same lines that we are trying to work on in our country. Many of the varieties that you have here are adapted to our conditions more nearly than the varieties that are grown farther south. For instance, you have the Patten's Greening and the Hibernial and some of those varieties which do exceedingly well with us under more or less adverse conditions. Of course, you know our standard variety around the island of Montreal is the Fameuse apple, that old French apple that we think is the best apple on earth except the McIntosh Red, which we think is ahead of the Fameuse, thinking it the best apple yet introduced in our country. I do not say that the McIntosh apple is the apple for you, but we find it much hardier than the Fameuse. I know it is not the intention for me to say very much this morning, so I thank you for your kindness.

Mr. Matthew Crawford (O.): You heard enough of me last winter, you will not need more than a word from me today.

Mr. C. G. Patten (Iowa): It gives me very great pleasure indeed to meet the Wisconsin horticultural people. I used to think that I was pretty well acquainted in Wisconsin when Mr. Peffer was living, Mr. Smith and Mr. Plumb and many others of the older members of this society, I seemed to know them all. Yet when I come among you now, I find that I am a stranger to a very large majority of the people here, not having lived in Wisconsin and having lived in Iowa for fortytwo years

and having been so long identified with the horticultural interests in that state and Minnesota, I seem to have a large number of acquaintances and a broadening interest in this matter, so that I really feel, having lived in Wisconsin as long as I did, I feel that when I come back here as though I were in a measure at home. When I come back to Minnesota, I have been there so many times that I feel at home there, and in Iowa, of course, I could not help but feel at home after the long time I have lived there, but it has given me a great deal of pleasure to see such a growth in horticultural interests in Wisconsin and also in Minnesota as we see it there. I am especially glad to see this in Wisconsin, because there have been times I have been here when there have been but a handful of people that would meet here and horticulture seemed to lag for a good many years here, but I realize now, looking over this audience, that we in Iowa, being a little more favorably located in some respects as to fruit growing, as we grow peaches in the southern half of the state, and in quite a section of the southern portion of the state we can grow pears abundantly, I feel that we shall have to be up and doing or else Wisconsin people will leave us far behind.

Prof. Hansen (S. D.): I shall come in for a share of your time a little later in the session, so I wish simply to indicate my horticultural platform. I think 1899 was the last time I was here, perhaps one time before this. The platform is that I believe mainly in our native fruits, but if there is anything anywhere else in the world of any value, we want to get it. In other words, we want the earth in the horticultural sense, anything we can use we want to get hold of and employ in our horticultural operations, and I think with that broad platform to stand on, that we will surely win out. I thank you.

Mr. Graves (Mo.): A Missourian has to be shown; I am on the plate now, but somewhat withered. I am from the almost extreme corner of southwestern Missouri; I was shipped up under refrigeration and since my arrival I have been in cold storage. For a time, however, I have been submitted to quite considerable heat and that deteriorates even good fruit, consequently, I am in a dilapidated condition. I am like one of whom you have read in the old Book, "I am with you in weakness and fear and much trembling," for I contracted a rather pronounced case of grip that stripped me of my appetite, so that I have not been able to enjoy many of the good things I have seen in your state. I anticipate a great deal of pleasure of this trip to the meeting of the horticultural people of Wisconsin. I never have been here before, I had no personal information with regard to your society, and the general condition of

the state, but I have read considerable of these things and I had a very earnest desire to look in upon the Horticultural Society here and see its doings, and I assure you I very much enjoyed the deliberations so far and I am quite sure that this will continue. I believe in reciprocity. We shall be delighted to have you come down into our corner of the world and see us. We grow fruit there, possibly you have heard that that is the land of the big red apple. Missouri has more orchard trees growing in it than any other state in the Union. It does not grow more fruit than any other state in the Union for the reason that many of our orchards are new and have not come into bearing, but later on if things move well, Missouri will be heard from in the propagation of good fruit. I am here, hoping that I may learn much from the horticulturists in this state and I am very much impressed with the enthusiasm with which you take hold of this work.

On motion, the visiting delegates were made honorary members.

Reports of Delegates From Local Societies.

LA CROSSE.

MR. JOHN VAN LOON.

Mr. Van Loon: I have been unable to get a report from our secretary, but Mr. Philips, one of our oldest members, has consented to make such a report.

Mr. Philips: After the Grange played out, we organized an agricultural society, but Mr. Hansen and myself were the only ones that would attend, so we disbanded and then organized the La Crosse County Horticultural Association and we have been keeping that up for twenty-five years, holding four meetings every winter; the ladies bring provisions and we have a free dinner. They discuss agricultural and horticultural subjects and I do not think there is a society in the state that for twenty-five years has done more good than that society. Children that I have seen crawling around on the floor are now old enough to discuss subjects with interest; they are men and women who have been brought up in that environment and every meeting we have there is just as good as a Farmers' Institute. They pack the house at every meeting. For years we have had delegates; last year Mr. Cranfield, I believe, thought there was too much agriculture or other things mixed in and thought they would not pay the expense of a delegate. This year he has consented to pay the expense of Mr. Van Loon. If there is any society in the state that is entitled to a delegate, I think it is that association. The secretary is a young man, Mr. Emil Hauser, and we have a membership of forty.

WAUPACA.

RAY BARNES, Secretary.

MRS. W. H. HOLMES, Delegate.

This report embraces both the Waupaca County and City Horticultural Societies as the county society was merged into the Waupaca Horticultural Society and Improvement Association three years ago. Our society numbers about sixty members. We have held but three meetings the past year. Those were well attended with the exception of the annual meeting in January; the small attendance was owing to a bad ice and sleet storm.

The officers chosen at the annual meeting were as follows:

President—W. H. Holmes, City.

Vice-President—Mrs. L. P. West, City.

Second Vice-President—Mrs. A. D. Barnes, City.

Secretary—P. L. Munger, Waupaca Route 1.

Assistant Secretary—Ray Barnes, City.

Treasurer—L. P. West, City.

A. D. Barnes, chairman programme committee.

Delegate elected to the Wisconsin State Horticultural Society annual winter meeting Feb. 5, 6, 7, 1907, W. H. Holmes; alternate delegate, Mrs. W. H. Holmes.

Our society has taken a deep interest in the work of the state in its practical demonstrations of spraying potatoes, fruit trees, etc., to prevent blight and kindred diseases, as well as other things along those lines which has benefited the fruit men and farmers. The work of Mr. Sandsten on the Chandler farm near Waupaca City in demonstrating the value of spraying potatoes was well written up and advertised by the local press and by the state bulletins and was no doubt productive of great good. Our local nurserymen are busy grafting now. A second nursery on a small scale was started here the past season. Several new seedling apples have materialized but have not been fully tested so as to admit of a report at this time.

OMRO.

MRS. JAS. STEAD, Secretary.

HENRY ROSS, Delegate.

The Omro Horticultural Society respectfully submits the following report for the year 1906:

Our society has held eleven meetings during the past year. At our August meeting we invited Algoma Society to meet with us, we also had the pleasure of having with us at this meeting Professor R. A. Moore of Madison, who gave a very interesting talk on the subject of Corn and Alfalfa.

In November we held a successful Chrysanthemum Show and Fair. We have a membership of 70 with a good attendance at our regular meetings, which we hold at the homes of our members the second Friday in each month.

At the annual meeting held Jan. 11, 1907, the following officers were elected:

President—A. C. Marshall.

Vice-President—Chas. Oak.

Secretary—Mrs. Jas. Stead.

Treasurer—Mrs. A. B. Frees.

Delegate to Winter Meeting—Henry Ross.

Alternate Delegate to Winter Meeting—Mrs. Jas. Stead.

Executive Board—Guy Treleven, W. R. Van Gilder, Mrs. Myrtie Frye, Mrs. Mattie Thomas.

 ALGOMA.

H. C. CHRISTENSEN, Secretary.

S. L. SMITH, Delegate.

I take pleasure in submitting the following report in behalf of the Algoma Horticultural Improvement Association.

The Algoma Horticultural Society meets at Algoma Grange hall, three miles west of Oshkosh on the second Tuesday in each month and numbers upwards of fifty members. It is in a flourishing condition socially and financially.

We have a number of practical horticulturists among our members and the discussions at our regular meetings are very

interesting as well as instructive. Other features of the meetings are a literary programme and the serving of refreshments which greatly enhance the sociability of the occasion.

Our public entertainments for the purpose of raising money are always well attended, while our annual dinners which are known as "Old Settlers Dinners," have become an event in which the whole country as well as a large number from the city take part. At the last dinner in March, 1906, fifty dollars was cleared for the benefit of the society.

At the annual election of officers held in January, 1907, the following were chosen:

President—John Athearn.

Vice-President—Thos. A. Cook.

Secretary—H. C. Christensen.

Treasurer—C. Phillipson.

At the February meeting S. L. Smith was elected delegate to represent the society at the winter meeting at Madison, Wis.

The following were appointed as members of the executive board: Mrs. S. L. Smith, Mrs. John Athearn, Mrs. Geo. Jones, Mrs. Austin Payton.

Mrs. Nelson Sheppard and Mrs. Thos. A. Cook were appointed to fill temporary vacancies on the board.

We respectfully submit the enclosed report.

LAKE MILLS.

DEAN E. SMITH, Secretary.

ROBERT FARGO, Delegate.

Report of the business meeting of the Lake Mills Horticultural Society, held Saturday evening, January 26, 1907, at the home of Robert Fargo.

Mr. George Kellogg acted as chairman and the following officers were elected for the coming year:

President—George Kellogg.

Vice-President—Mr. C. T. Fargo.

Secretary—Dean Smith.

Treasurer—Robert Fargo.

Mr. Robert Fargo was elected to represent the Lake Mills Horticultural Society at the meeting of the State Horticultural Society to be held at Madison on February 5, 6 and 7.

Plans were adopted to hold monthly meetings throughout the year.

Mesdames Bernard and Fargo were elected to arrange programmes for these meetings.

After the business was transacted the following programme was given:

A paper written by Mr. Robert Schultz on "Pears" was read by Miss Grimm of Jefferson.

"My Flower Garden," was read by Mrs. E. J. Fargo.

Mrs. Frank Fargo read an article on "Perennials."

Mr. L. D. Fargo read an article on "Forestry."

The papers of Mrs. E. J. Fargo and Mr. Robert Schultz were published later in the Lake Mills Leader at a request of the society.

The organization consists of twenty-five members. After a discussion of various facts in the interest of Horticulture the meeting adjourned.

SPARTA.

E. A. RICHARDSON, Secretary and Manager.

J. W. LEVERICH, Delegate.

The Sparta Fruit Growers' Association of Sparta, Wis., would respectfully report to you the closing of a very successful year's business, in fact far more successful from a financial basis than any previous year in our existence.

At a meeting of our association held March 17, 1906, our constitution and by-laws were changed and the manner of selling our fruit placed on a co-operative basis. A very marked increase in cash to our members for their fruit has been the result, and all are well satisfied with this system of disposing of fruit. The sale of all fruit has been made by our careful and efficient manager, Mr. E. A. Richardson.

We consider our fruit crop rather light this season, yet our sales reached nearly fifty thousand dollars (\$50,000.00). The expense of grading, selling, and conducting the business was but two and one-half per cent. The report of the treasurer shows a balance of over nine hundred dollars (\$900.00) on the right side of the ledger.

Our association is now in a highly prosperous condition, has nearly two hundred and seventy-five members, with officers as follows:

President—W. H. Hanchett.

Secretary and manager—E. A. Richardson.

Treasurer—D. W. Cheney.

Directors—F. W. Teall, vice-president, J. W. Leverich, B. H. Wright, P. H. Wagner, J. L. Herbst, and W. D. Williams.

Our annual meeting was held Feb. 2nd, at which the association voted to increase the capital stock to six thousand dollars (\$6,000.00), also to purchase real estate in the city of Sparta to the value of three thousand dollars (\$3,000) so as to have our own building and grounds with which to conduct the business of the association.

The following resolution was passed by unanimous vote at the last meeting of our association:

Whereas, a bill has been introduced in the legislature asking that the appropriation to the "Wisconsin State Horticultural Society" be increased to eight thousand dollars (\$8,000.00), therefore be it

Resolved, by the members of the Sparta Fruit Growers' Association in annual convention assembled, that we do hereby request our senator, Hon. H. W. Barker, and our representative, Hon. John R. Jones, to use all honorable means to secure the passage of the above bill in the senate and assembly, as we believe much good can be rendered to the fruit interests of the state by an increase in the amount of the annual appropriation by the state to the State Horticultural Society. Be it further

Resolved, that our secretary be and is hereby directed to forward to our senator and representative a copy of this resolution.

The members of our association wish to extend a cordial and urgent invitation to this society to hold the Summer meeting at the city of Sparta. We will do all in our power to help make the meeting a success, and hope that the executive committee may decide to hold this meeting at Sparta.

More of the workings of our society will be given to this meeting by our manager, Mr. Richardson. I will close this report by extending to all members of the State Horticultural Society an invitation to visit us and inspect our manner of cooperation in the marketing of fruit. Our association has proven, beyond a doubt, that business methods can be as profitable when applied to the management and sale of fruit as to any line of business.

MANITOWOC.

J. A. BOOK, Secretary.

PROF. T. CHRISTENSEN, Delegate.

Report of the Manitowoc County Horticultural Society, Manitowoc, Wis., to the officers and members of the Wisconsin State Horticultural Society.

Manitowoc County Horticultural Society was organized Oct. 20, 1906. The first annual meeting was held at Manitowoc, Wis., Jan. 19, 1907. Owing to inclemency of the weather the attendance at the annual meeting was not as large as expected. Several addresses, very instructive and interesting, were given by several members. Twenty-four different varieties of apples, grown in Manitowoc county, were exhibited.

This society, less than half a year old, has a membership of about fifty, which will be increased to one hundred by the next annual meeting. Meetings will be held in the County Teachers' Training School rooms in the public library building, Manitowoc, Wis.

Resolutions were adopted instructing the Manitowoc county representative in the state legislature to use their influence in increasing the state aid of the State Horticultural Society, and also work to the establishment of a trial orchard in Manitowoc county.

The election of officers at the annual meeting resulted as follows:

President—H. F. Hubbard, Manitowoc, Wis.

Vice-president—J. C. Paulson, R. F. D. No. 4, Manitowoc, Wis.

Secretary—J. A. Book, Manitowoc, Wis.

Treasurer—Fred Christiansen, Manitowoc, Wis.

The above officers constituted the executive committee. The next meeting will be held during the mid-summer.

RUSHFORD.

H. H. G. BRADT, Secretary and Delegate.

In submitting the annual report of the Rushford Horticultural and Improvement Society we are happy to say we retain our interest in our chosen work and are as progressive as ever in fostering the pure and elevating lines of horticulture.

Our society numbers sixty-five members, and we feel that the uniform excellence of our membership contributes greatly to our success, for it is undeniable that successful results must come from intelligent, energetic, and self sacrificing efforts.

All our meetings are held in Eureka; the stated dates of our regular meetings are on the first Saturday in each month. The proceedings are conducted through a regular "Order of Business," in which discussions of selected topics of moment are freely and comprehensively handled.

Programs of entertainment, with music, recitations and readings are provided by committees, and all that are willing to volunteer anything of interest are welcome to do so.

Picnic dinners are furnished by our ladies and are considered a standard institution with us, and all indulge in those bounteous blessings with due appreciation of their merits.

Our flower and fruit exhibits are a delight to numerous visitors and beget a high spirit of enthusiasm with all beholders, many of whom are attracted from a distance by the well known character of our displays.

We have a specialty in propagating hardy seedling apples in which we have developed several valuable varieties.

The deep interest manifested upon the kindred subjects of horticulture and floriculture within the limits of our society are most gratifying, and we feel assured that every member of our association think they are amply recompensed for their efforts in past years in the instituting of and sustaining our general work.

Our officers for 1907 are:

President—Dr. T. E. Loope.

First vice-president—J. F. Diley.

Second vice-president—Mrs. I. E. Becker.

Treasurer—Mrs. M. E. Penniman.

Recording and corresponding secretary—H. H. G. Bradt.

Assistant secretary—Mrs. Mae L. Bradt.

Delegate to 1907 state winter meeting—H. H. G. Bradt.

Alternate—Mrs. Mae L. Bradt.

LAKE GENEVA GARDNERS' AND FOREMEN'S ASSOCIATION.

AXEL JOHNSON, Delegate.

The following is a short report of the Lake Geneva Gardeners' and Foremen's Association's work for the year just gone by:

Meetings have been held once a month regular and several special meetings have had to be held in order to get through with the amount of work on hand. Papers have been written by many of the members on various subjects giving their personal experience on the subject. This has always brought forth a lively discussion and has been very instructive to all.

Several small exhibitions have been held in our hall at our meetings, such as fruit, flowers and vegetables of rare qualities, and scarcely a meeting has passed without something has been brought by somebody for exhibition and discussion. A flower show was held last November and proved a great success in every way. It brought out as fine a lot of exhibition material as you will find anywhere.

In cut flowers: Roses, carnations, chrysanthemums, violets, lily of the valley, etc.

Plants were mostly chrysanthemums, but there were also to be seen an excellent collection of other plants too numerous to mention. Fruits and vegetables were also represented.

We also had a children's chrysanthemum show. Our association distributed over 500 chrysanthemum plants last May with instructions how to grow and care for them until in bloom, among the school children. At the same time and place as we had our show the children had theirs, under the supervision of our chrysanthemum committee, and in the neighborhood of 100 plants were brought. Some plants were very well grown, others were not as good, but if you had seen the children that brought their plants you would have said as we did: "*It was well worth the effort.*"

We had them classified as follows:

Class 1, consisting of 1 and 2 grades.

Class 2, consisting of 3 and 4 grades.

Class 3, consisting of 5 and 6 grades.

Class 4, consisting of 7 and 8 grades.

Class 5, consisting of gardeners' children.

Four prizes were given to each class: 1st prize, \$5; 2nd, \$2.50; 3rd, \$1.50; 4th, \$1; thus distributing \$50 in prizes

among the school children. It would be well worth the trouble for other societies to try it.

We have 50 active members in good standing, 9 associate members and 36 honorary members (mostly employers).

Financially our association is in very good standing:

Our income for the year.....\$839 75

Our expenses for the year..... 494 86

Cash on hand\$344 89

CRANBERRY GROWERS.

A. C. BENNETT, Secretary.

A. E. BENNETT, Delegate.

Dear sir: I herewith submit my report of the Wisconsin State Cranberry Growers' Association for the present year:

President—A. E. Bennett, Grand Rapid, Wis.

Vice-president—O. O. Potter, Grand Rapids, Wis.

Secretary—J. W. Fitch, Cranmoor, Wis.

Treasurer—J. J. Emerick, Cranmoor, Wis.

Member of executive committee, J. B. Arpin, Grand Rapids, Wis.

Life members, 26; ordinary paid-up members, 24.

Cash on hand, \$252.63.

The association holds two meetings annually, one on the second Tuesday in January, the other on the Tuesday succeeding the second Monday in August. The association is in a united, healthy condition and of great service to its members.

PREMIUM LIST OF THE
WISCONSIN STATE HORTICULTURAL SOCIETY.

The following premiums were offered for Exhibits of
Fruit at the Annual Meeting

Madison, February, 5th, 6th, and 7th, 1907.

1. Best Collection of Apples, not less than 25 varieties (3rd premium \$3.00).....	\$10 00	\$5 00
2. Best 4 varieties Winter Apples for market; quality, hardiness, productiveness, keeping qualities and appearance to be considered	3 00	2 00
3. Best 3 varieties Winter Apples for family use; qualification as above.....	2 00	1 00
4. Best New Apple named and in bearing at least 5 years but not on Society fruit list	5 00	2 50
5. Best Seedling Apple.....	3 00	2 00
6. Best Plate Baldwin.....	1 00	50
7. Best Plate Ben Davis	1 00	50
8. Best Plate Dominion	1 00	50
9. Best Plate Dudley	1 00	50
10. Best Plate Fameuse	1 00	50
11. Best Plate Gano	1 00	50
12. Best Plate Gideon	1 00	50
13. Best Plate Golden Russett	1 00	50
14. Best Plate Longfield	1 00	50
15. Best Plate Malinda	1 00	50
16. Best Plate Mann	1 00	50
17. Best Plate McIntosh	1 00	50
18. Best Plate McMahan	1 00	50
19. Best Plate Milwaukee	1 00	50
20. Best Plate Newell	1 00	50
21. Best Plate Northern Spy	1 00	50
22. Best Plate Northwestern Greening.....	1 00	50
23. Best Plate Patten	1 00	50
24. Best Plate Perry Russett	1 00	50
25. Best Plate Pewaukee	1 00	50
26. Best Plate Plumb Cider	1 00	50
27. Best Plate Seek-No-Further	1 00	50
28. Best Plate Scott Winter	1 00	50
29. Best Plate Sutton Beauty	1 00	00

30. Best Plate Tolman	1 00	50
31. Best Plate Twenty Ounce.....	1 00	50
32. Best Plate Utter	1 00	50
33. Best Plate Wagner	1 00	50
34. Best Plate Waldbridge	1 00	50
35. Best Plate Wealthy	1 00	50
36. Best Plate Willow Twig.....	1 00	50
37. Best Plate Windsor	1 00	50
38. Best Plate Wolf River.....	1 00	50
39. Best Peck Northwestern Greening.....	2 00	1 00
40. Best Peck Wealthy	2 00	1 00

LIST OF AWARDS—WINTER MEETING.

Your committee appointed to award premiums on the fruit exhibit would make the following report:

We find on the tables upwards of 350 plates of fruit, mainly winter varieties of apples, upon which we have awarded the following premiums:

Best collection of apples, not less than 25 varieties. First, Henry Simon; second, Bingham and Lawrence; third, John Reis.

Best 4 varieties winter apples for market, quality, hardiness, productiveness, keeping qualities and appearance to be considered. First, A. D. Brown; second, Henry Simon.

Best three varieties winter apples for family use; qualifications as above. First, Bingham and Lawrence; second, A. D. Brown.

Best new apple named and in bearing at least five years but not on society fruit list. First, John Reis; second, A. N. Kelly.

Seedling. First, John Reis; second, M. V. Sperbeck.

Baldwin. First, Bingham and Lawrence.

Ben Davis. First, A. N. Kelley; second, E. D. Hopson.

Dominion. First, Bingham and Lawrence.

Fameuse. First, John Reis; second, Henry Simon.

Gano. First, John Reis; Bingham and Lawrence, second.

Gideon. First, John Reis.

Golden Russett. First, Henry Simon; second, Janes P. Oleson.

Longfield. First, A. D. Brown; second, Bingham and Lawrence.

Mann. First, A. N. Kelley; second, Geo. J. Kellogg.

McIntosh. First, M. V. Sperbeck; second, Bingham and Lawrence.

McMahan. First, A. D. Brown; second, A. N. Kelly.

Newell. First, A. D. Brown; second, John Reis.

N. Spy. First, P. J. James; second, A. N. Kelly.

N. W. Greening. First, Bingham and Lawrence; second, James Riley.

Patten. First, John Reis.

Perry Russett. First, Henry Simon.

Pewaukee. First, A. N. Kelly; second, Henry Simon.

Seek-no-Further. First, Geo. J. Kellogg.

Scott Winter. First, A. D. Brown; second, Bingham and Lawrence.

Tolman. First, Henry Simon; second, Janes P. Oleson.

Utter. First, Geo. S. Church; second, Geo. S. Church.

Waldbridge. First, Henry Simon; second, John Reis.

Wealthy. First, A. D. Brown; second, Bingham and Lawrence.

Willow Twig. First, Bingham and Lawrence; second, Henry Simon.

Windsor. First, Bingham and Lawrence; second, Geo. G. Kellogg.

Wolf River. First, Henry Simon; second, A. N. Kelly.

Peck N. W. Greening. First, Bingham and Lawrence; A. N. Kelly, second.

Peck Wealthy. First, A. D. Brown; second, Henry Simon.

Your committee also finds on the tables plates of several varieties not included in the premium list. We find a plate of Merrimac grapes exhibited by Geo. J. Kellogg for which we would recommend a premium of 50 cents and a plate of seedling pears exhibited by Janes P. Oleson and premium of \$1.00

Respectfully submitted,

C. H. TRUE.

C. G. PATTEN.

L. G. KELLOGG.

REPORT OF COMMITTEE ON FINAL RESOLUTIONS.

WM. TOOLE, Chairman:

The following resolutions were presented:

Whereas, a very great amount of damage is done every year to nursery and orchard trees as well as ornamental shrubbery and

Whereas, the amount of injury done by these pests to the nursery men and orchardists is steadily on the increase.

Resolved, that the Wisconsin State Horticultural Society in annual convention assembled do earnestly request that our state legislature shall remove all restrictions from efforts to suppress the rabbit nuisance.

Resolved, that the Secretary of this Society is hereby instructed to cause these resolutions to be placed before the proper committees of our State Senate and Assembly.

Resolved, that the Wisconsin State Horticultural Society recommends that "single plates" of varieties of fruits shall, when placed on exhibition at the State Fair be arranged separately from "collections".

The Secretary of this Society is instructed to convey a copy of this resolution to the Secretary of the State Agricultural Board.

Resolved, that the chair appoint three members to constitute a committee to conduct means and methods of rendering assistance to villages and cities in civic improvement.

Such assistance only to be rendered on application of a total number of members resident in the village or city making the request and further that the total number of petitioners shall be equal to one member for each 500 population.

Resolved, that in appreciation of the devoted and excellent services rendered in the interests of the Society by the retiring officers, the Society extends a vote of thanks and its felicitations to Ex. President Loope and Ex. Vice President Coe; also that this resolution be recorded in the annual report and further that the Secretary be and is hereby instructed to convey directly to each of these retiring officers the sentiment of this text.

RESOLUTIONS OF THE STATE HORTICULTURAL
SOCIETY PETITIONING THE LEGISLATURE.

Whereas, it has come to the knowledge of the State Horticultural Society that a bill providing for the purchase and maintenance by the state of Wisconsin of the Devil's Lake region to be used as a State Park; and,

Whereas, this Society believes that such a park will be of great and permanent usefulness and a source of continued enjoyment to the people of the state and of the country at large, both of this generation and of the generations to come; and,

Whereas, since it is clearly apparent that this Devil's Lake region, as well as many other beautiful regions, are fast disappearing and subject to complete devastation; and,

Whereas, this Society is firmly of the belief that regions of unique and unusual beauty such as these are the natural heritages of the people and should as such be under the control of the people;

Be it resolved, that the State Horticultural Society representing its 550 members, this day assembled in annual convention at Madison, Wisconsin, does hereby respectfully and urgently petition the legislature now in session to enact such laws as will in the opinion of its honorable members adequately and suitably provide for the acquisition by the state of the Devil's Lake region; and,

Be it further resolved, that the secretary of this Society be instructed to cause these resolutions and this petition to be presented to those honorable bodies, the Senate and the Assembly, now in session.

Madison, Wisconsin, February 7, 1907.

LIST OF CONTRIBUTORS TO STATE FAIR EXHIBIT,
SEEDLINGS.

James Apker, Baraboo.
John F. Swartz, Kenosha.
K. K. Newhouse, Clinton.
E. D. Orr, Mt. Hope.
Janes P. Oleson, Fond du Lac.
A. D. Brown, Baraboo.
Edward Hanko, Sandusky.

E. M. Menn, Norwalk.
D. C. Buckstaff, Oshkosh.
M. H. B. Cunningham, Rockbridge.
Will L. Taylor, Mt. Hope.
L. A. Carpenter, Fond du Lac.
H. F. Marsh, Antigo.
Urso Downey, Whitewater.
Geo. Gaylord, Merrilan.
C. G. Johns, Clintonville.
Fred Rood, Genoa.
Ansel Smith, Sparta, Wis.

THE DUDLEY APPLE.

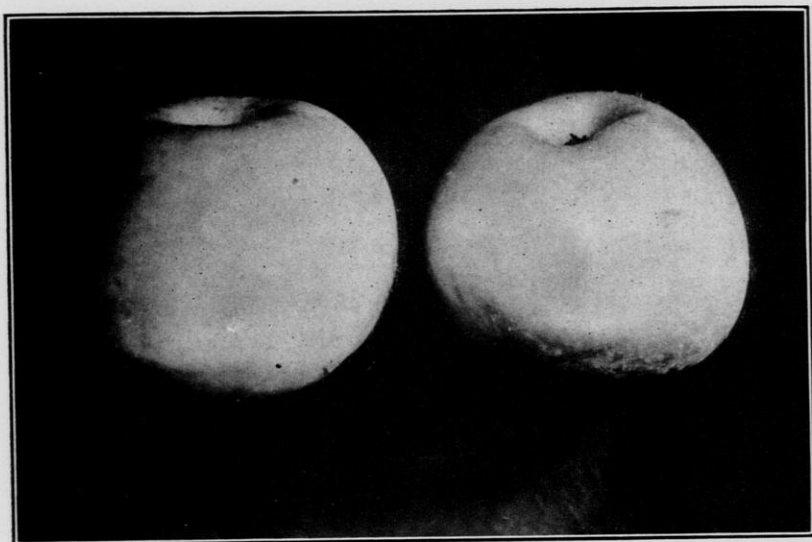
AN APPLE OF MERIT FOR NORTHERN WISCONSIN.

The Dudley, sometimes called North Star, is an apple that can be safely recommended for culture in the northern counties of this state.

The tree is very hardy, a vigorous grower and productive. The fruit averages larger than Oldenburg and ripens in October at Wausau, Marshfield and points north of these places. Farther south it ripens with Wealthy or a trifle earlier. The following history and description is from Vol. II of the "Apples of New York" by Prof. Beach:

"A seedling of the Oldenburg, which originated with J. E. Dudley, Castle Hill, Aroostook county, Maine. A few years ago it was introduced by a Rochester nursery under the name of North Star, but it was afterward found that this name had already been given to another variety and therefore the name Dudley Winter was retained for it which, according to the accepted rules of nomenclature, is shortened to Dudley.

"A very hardy and productive variety which is being planted to a considerable extent in northern New England. The fruit is pretty large, bright greenish-yellow washed and splashed with red, quite attractive in appearance and good in quality. Munson says that it is perhaps now more widely grown than any other of the newer sorts that have originated in New England. He considers it a valuable acquisition as a winter fruit for northern localities. As fruited at Geneva it is in season in September and October, although it may sometimes be kept into winter. It is recommended for trial particularly where a very hardy apple of its season is desired."



Wendorff Seedling, much reduced, specimens from Wausau Orchard.
Sept. 8, 1906.



Wendorff Seedling calyx and stem ends.

Mr. Herman Kauffman of Marshfield writes as follows of the Dudley:

"In regard to the North Star or Dudley apple, will say that the trees with which I am best acquainted were bought of a Rochester, N. Y., firm and planted in the spring of 1897. Mr. Peterson of the town of Lincoln, Wood county, planted twelve trees, of which one died and the remainder have done well, bore first fruit in 1900. These trees were planted in sod but well mulched every fall with stable manure. In 1905 these trees averaged five bushels per tree. Tree a strong grower, somewhat spreading, blights some but not more than the Duchess, quality of fruit better than Duchess, keeps well into October and does not crack and get mealy in storage as the Duchess does. Tree as hardy as Duchess so far."

The four trees of Dudley in the Wausau trial orchard are most excellent trees, showing no sign of blight or canker. These trees bore heavily in 1904 and 1906 and a fair crop in 1905.

Of the four Oldenburg seedlings in the Wausau orchard, viz.: Dudley, Milwaukee, Hoadley and Morgan, the Dudley is easily the best in all respects.

THE WINDORFF APPLE.

This is a Marathon county seedling apple and should prove especially valuable for central and northern Wisconsin. It is an early winter apple, keeping fairly well under ordinary cellar conditions until December or later. The variety originated on the farm of Albert Windorff of Marathon county.

Mr. A. J. Phillips, our veteran pomologist, who top grafted the Windorff tree in the Wausau trial orchard, writes as follows:

"Yours asking about the Windorff apple received. The seeds were planted by Albert Windorff in the Town of Stettin in Marathon county, nine miles from Wausau. The seeds planted were of the Northern Spy. The old tree resembles the McMahan, is not as upright a grower as the tree I top grafted in the Wausau orchard on a Virginia crab, that is a beautiful tree. Mr. Windorff tells me it has stood 44 below zero and bore apples the next season. It does not equal the McMahan in size on an average, but is better in quality and keeps longer. Mr. Windorff has kept it and had it on his table on Easter Sunday."

A description with notes prepared from specimens from the trial orchard tree follows:

Size: Medium to large.

Shape: Oblate to conic; more or less furrowed; generally one-sided.

Color: Yellow, blushed or partly overspread with light carmine; dots numerous and distinct.

Cavity: Abrupt, deep, extending to core; furrowed; calyx open.

Basin. Broad, deep; stem medium, stout; core open.

Flesh: Greenish white, crisp, juicy, a trifle coarse; mildly acid, with flavor resembling Fall Orange.

Quality: Fair to good.

Season: Sept. to Oct.

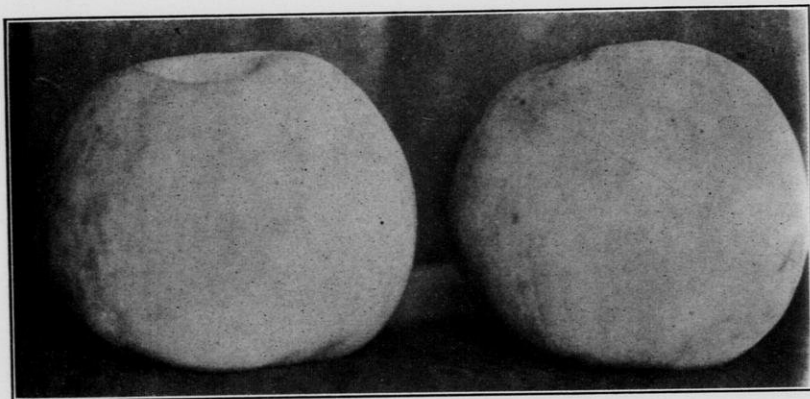
Notes: This apple does not color highly, only exposed specimens showing much red. Prevailing color when ripe, yellow. A large apple, approaching McMahan in size and excelling in flavor and keeping qualities.

Specimens from tree in Wausau orchard.

This tree was topworked on Virginia crab by A. J. Phillips in 1897 or 1898 and is fully hardy at Wausau.

L. D. FARGO, LAKE MILLS, ON TREES.

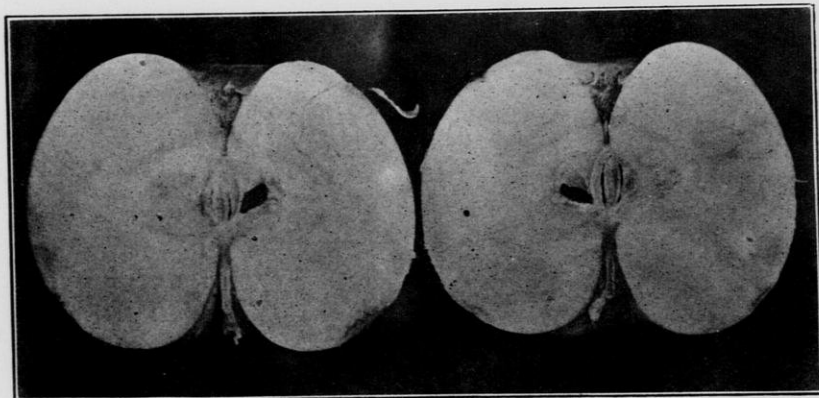
If we would keep hearts fresh, as the years go by, let us plant a few trees. The tempered light of a lovely grove is a perpetual morning. All the way down, until this later period, there seems to have been hallowed associations, and sometimes superstitious reverence for trees. They make us better. That eye must be blind that does not see the Divinity, in planting the forest. Language fails to portray the beauties of our Burr Oak wild woods; the green carpet decked with ten thousand beautiful flowers; the native stillness so restful during those pioneer years. The home of the Druid Gods. Do you wonder that I love the trees? God is there. Every leaf is a miniature tree of itself. Says one "What a thought that was when God thought of a tree". Yes, a single tree, originating in an atom of seed, deriving its vitality from the heavens, gathering its nourishment in part from the earth, feeding upon the air, selecting its coloring from the sunbeams and elaborating its several parts by the mysterious power of its own vitality. Nothing can rival their grandeur and scenic beauty. Flowers of



The Dudley apple, much reduced, specimens from Wausau orchard, Sept. 8, 1906.



End views of above.



Section of above.

every hue to delight with beauty and regale us with odor. Fruits to supply our wants, timber to supply purposes of art and industry. We may yet learn the value of trees, not only for their sympathetic beauty and food, but for their healthful helps, as weather modifiers, rain helps and wind breaks. It is well to remember that a tree is for something more than a cumberer of the ground. The wildest tribes of men can see the handiwork of the Great Spirit in a tree. Shall we, who claim the highest degree of civilization, the leaders of men, shall our great state suffer all our native forests plundered, and at home what few groves ruined by cows? Shall this generation rob God of all its perfect beauty? The Gods planted for us, is this generation's greed so great as not to leave a few groves to those who come after us? Every community has a large interest in having the road side and hills tree clad and the peat marshes grow something besides brakes and worthless weeds. We all have a claim to natural beauties and sublimities. Individual or corporation rights in a parcel of ground should not cause it to be an ugly spot, or a barren waste. Natural glories cannot be owned by an individual. We get health and pleasure and oftentimes inspiration from these shady bowers and timbered hills. Travelers tell us that there is nothing attractive about the ruins of an old castle, that so many visit, but it is the surroundings, the stately trees, branches locking and interlocking, the wild wood groves, creeping vines over the ruins and memories of the past, that induces so many tourists to visit these relics.

The enchantments of Tyranena are not all its crystal waters or foaming billows, or excellent fish and boating. When I first saw it, old oaks beautified the hills, shimmering poplars, lindens and graceful elms o'erhung the lake borders, a restful shade for summer birds and underneath a sporting place for the finny tribe. Here on these trees the fish hawk built her nest and reared her young. Black birds sang their morning and evening songs. There had been no wood fiend to disturb the native grandeur, no ruthless hand marred the lake border, a restful place. Drouths follow the destruction of forests, as retribution follows sin. The lesson has been learned in the hard school of experience. Our wild woods are mostly gone and the cow has killed the most of our groves, a year or two more will about use up the supply of hard wood fuel for our villages. Coal at nine dollars a ton does not look very cheering. Swamp bogs, commonly called peat, has proved itself a nuisance. Corn is too dear; conducting steam or water pipes, a failure. I see no way out of this dilemma but to plant trees.

I planted out at least a thousand last year. When there is an open space in my timber I stick in trees. This we have followed for years. My timber lots, one of 20 acres, the other of 25 acres, are unequaled in this vicinity. We put out maple, butternut, white ash, basswood, elms, cedars, black walnut, western catalpa, boxwood. Burr oaks are too slow growth; the white willow and tamarack for the marshes. We have tested all of the former. We plant the seed of the maple, butternut and catalpa where they can be cultivated. The others propagate themselves from trees set in the grove, near our farm residence. Basswood is easily cultivated; take a sprout of last year's growth chipped from the root of a tree or stump with scarce any fibrous roots if properly set and mulched will do well. I prefer small trees. In setting one year's growth, I usually press the spade down the length of the blade, press down on the handle to enlarge the space, lift the handle and place the tree back of the spade, be careful in pulling up the spade, press the ground with your foot and put some leaves around as a mulch. A man with a boy to handle the trees can set several hundred a day; then keep the cattle off the field and you will grow timber. The white willow simply needs to be driven down into the peat about 14 or 15 inches, the sprouts near the ground rubbed off, if you wish to grow a tree, stamp the snow in winter close around the tree, to prevent the mice from girdling them when small. Mr. Raynor tells me he has cut his twenty rod hedge twice in eleven years, thinks the last cutting was between ten and eleven cords in bulk. It makes good wood when dry. Then why not grow something besides brakes and worthless weeds on wet land and thus add to our fuel supply. Beautify our residences and the roadside by setting in hard wood trees and thus cause our posterity to call us blessed.

L. D. FARGO.

Lake Mills, Wis., Feb., 1907.

(Mr. Fargo is at this date 83 years young.—Editor.)

FINANCIAL REPORT OF SECRETARY.

(Omitted, by error, from Report of Secretary, pp. 67-74)

Membership fees	\$397 00
Books sold	3 73
Fruit and plants	57 10
Refund	6 00
Refund	5 32
Order No. 534	300 00
Order No. 598	25 00
Order No. 600	75 00
Order No. 648	100 00
Order No. 698	364 24
Eleven salary checks	1,100 00
	<hr/>
	\$2,433 39

Credits.

Feb. 9. Cr. by payment to L. G. Kellogg, Treas.	\$55 00
Mar. 27. Cr. by expense account allowed112 75
Mar. 31. Cr. by expense accounts allowed.....	256 05
Oct. 4. Cr. by expense accounts allowed.....	297 56
Dec. 16. Cr. by expense accounts allowed.....	64 23
Cr. by eleven salary checks.....	1,100 00
1907.	
Feb 5 Cr. by expense account allowed	133 53
Feb. 5. Paid to L. G. Kellogg, Treas., to balance	50 03
Feb. 5. Paid to L. G. Kellogg, Treas., member- ships etc.	364 24
	<hr/>
	\$2,433 39

A FLOWER CONVENTION.

FROM THE WISCONSIN AGRICULTURIST, Sept. 13, 1906.

The recent convention of the State Horticultural Society at Baraboo was not less enjoyable than others in past years. This alone is saying much. If we say it excelled in many respects any heretofore held it will be but feeble praise. The weather was perfect. Few of those attending from outside points waited for the later trains, but came in a day ahead in order to enjoy for a time the many beauties of Baraboo and the Devil's Lake region.

Horticulture has a closer hold on the hearts of its devotees than any other pursuit. Nothing could show this plainer than the attendance this busy year of abundant harvests in a busy season, of men and women who are not as a rule rich enough to afford much leisure. They were from all parts of the state and reversed the common practice of conventions marked by boisterous nights and late mornings. They were bound to "do the town," but by daylight trips, climbing "Cheek hill" for a view of the city and the lake bluffs, usually before breakfast. The programme was one of unusual excellence. All of the papers showed care and thought in their preparation, and the results of this convention should and will serve to bring to the attention of thoughtful landscape gardeners and nurserymen throughout the United States the wealth of material available for the decorative purposes native to this state.

"Native Ferns," by William Toole, and "Some Native Flowers Worthy of Cultivation," with the discussions following, occupied the forenoon session. In the afternoon John Tiplady presented a splendid paper on "Native Shrubs," as did William Longland on "Native Aquatics". These gentlemen are professional gardeners from Lake Geneva and thoroughly trained in all branches of their profession. One of the most delightful papers was by Mrs. J. E. English of Baraboo on "Native Fungi," illustrated by a splendid collection of fungi, including, in addition to the commoner edible and poisonous mushrooms, many rare and interesting specimens. These papers, as well as others, will appear in full in early issues of the Agriculturist.

Some disappointment was expressed at the evening session when it was announced that Park Superintendent Mische of Madison would not be present. His paper was read by the secretary.

Although not announced on the programme, a feature of marked interest was an address by Mr. W. M. McFetridge of Baraboo on the proposed Devil's Lake park proposition.

Mr. McFetridge is working with a commission which has been appointed by the governor of the state. This committee is to report to the legislature next winter on the necessity and feasibility of reserving an area about Devil's Lake including not only the lake and short line, but several square miles of the surrounding bluffs and forest area with a view of preserving for all time the beauties of this remarkable region. That such a step is necessary was shown by Mr. McFetridge. The forested area comprising the watershed supplying the lake is being rapidly cleared of timber, resulting in a marked lowering of the lake. The deforesting also results in the destruction of the remarkable flora of this region.

Another source of this immediate danger is the marring of the bluffs on the lake shore by the removal of immense quantities of rock by Chicago firms. This is being removed by train-loads, resulting already in ugly scars on the face of the bluffs, and if allowed to continue will ultimately destroy their scenic beauty. That Mr. McFetridge's plea fell on no unwilling ears was proved by the society endorsing the proposed plan of a state park by the following resolutions:

"Whereas, There is a movement now on foot to induce the state of Wisconsin to establish and maintain a state park at Devil's Lake; and,

"Whereas, The project to preserve for all time this beautiful region, now threatened by destruction, appears a commendable one which should receive the support of every citizen of our state; and,

"Whereas, From a horticultural standpoint, the preservation of the region is particularly desirable, since it includes and primarily is for the protection of the flora and for its increase and development; be it

"Resolved, That the State Horticultural Society unanimously declare itself in favor of the said project and endorses it; and, be it further

"Resolved, That this society recommends that the next session of the legislature appropriate a sum sufficient to purchase and set aside this region to be used and maintained as a state

park, subject to the state laws, and open to the use and enjoyment of the people of the state, for this generation and for the generations to come”.

THE FLOWER SHOW.

Four distinct features marked the flower show at the convention. First, the generous display of native and garden flowers from the vicinity of Baraboo. This alone was sufficient had space been available to allow the exhibits proper staging to make a complete show. Mrs. Wm. Helm exhibited fifty vases of garden flowers, others nearly as many. The display of asters was especially fine.

Second, the display of potted plants by amateurs, in other words, “house plants” in the strictest meaning of the term. The Baraboo ladies entered into the liveliest competition in this class, Mrs. Mary Arnott capturing most of the prizes.

The third and most instructive feature to the majority of those present was the splendid collection of gladioli sent by John Lewis Childs of Floral Park, New York, and Vaughn’s greenhouses of Chicago. The former exhibit comprised fifty-one vases of gladiolas in seventeen choice varieties, including one hundred spikes of the new America, a beautiful shell pink gladiolus. The display of gladiolus by Vaughn, while less in extent, was marked by superior excellence of bloom. The spikes were immense in length and size of flowers.

In addition Vaughn sent a collection of ferns, palms and other decorative plants. This collection was afterwards purchased by Prof. Sandsten for the university greenhouses.

The fourth and most attractive feature of the show from the standpoint of the average visitor was the two monster water lily leaves sent from the Missouri Botanical Garden at St. Louis.* These giants measured each a trifle over six feet in diameter! In a letter from Supt. Irish accompanying the leaves he says: “Just before the leaves were cut I had the pleasure of standing upon one of them as it floated in the water, thus showing how much weight it might bear”.

* See letter p. 24.

The committee on resolutions not being ready to report, the following resolutions were read by the secretary:

Resolution in regard to suppressing rabbit nuisance was adopted as read.

Motion to appoint committee to investigate methods of assisting villages in civic improvements, etc., was carried.

Resolution regarding Devil's Lake region was adopted.

Resolution regarding two-cent passenger rate was lost.

Vote of thanks to retiring officers was carried unanimously by a rising vote.

Resolution referring to single plates for exhibition at State Fair was adopted.

Resolution regarding national law for regulating fruit packages was read and adoption moved.

Mr. Reigel moved to lay on the table.

Mr. Hutchins: May I offer a suggestion here? There is quite a general movement in this regard. I am sorry you have not had time to take this matter up and discuss it more generally. The matter was brought before the Michigan society and it was heartily adopted. The proposition as it now stands would be, as I understand it, that each of these main horticultural associations, as well as commission men, shall appoint a member who will meet at some point in the not distant future and agree on some measure of legislation which shall meet the exigencies of the case. The proposition as it now stands should be something along the line of what is known as the Canadian fruit market law. Briefly stated, it requires that all packages that are under standard size shall be marked "short" packages, whether barrels or boxes or anything else. Of course the act would necessarily prescribe what constitutes a standard package and anything short of that should be marked "short" package, and prescribe something with reference to the fruit that should go into barrels or packages and that only a given per cent. of the fruit shall be below that standard, so that there can be something in the nature of uniform packing, that is, honest packing. Then it would be necessary to have a system of inspection. In Canada they have a very efficient inspection law. Very few inspectors are sufficient to hold these packers in shape. The name of the packer is placed onto the package and his address, and the very fact that that package is liable to be found somewhere by some inspector and come back upon the packer is sufficient to restrain very largely a great deal of the crooked packing that is spoken of so largely now. Briefly stated, that is what the movement contemplates and you are simply asked to fall in with this general movement and participate in the efforts to secure such legislation.

Mr. Toole: I do not think we can discuss these things now, as it is getting so late. This was merely brought up as a suggestion and I would recommend that the society turn this over to the executive committee for such action as they may instruct the president and secretary to take.

Mr. Reigel: There is a question before this house that has been seconded, I have a motion looking forward to this after this was disposed of. I move you that this resolution as read may be laid upon the table.

Motion carried.

Mr. Toole: Then I will repeat, as near as I can, the motion I wish to make. We feel that it requires more consideration than we can give it now, therefore I move that this be turned over for the consideration of our executive committee and that our president and secretary take such action as the executive committee may recommend.

Motion to refer to executive committee carried.

The President: I would like to say that to my mind we have had a grand good meeting. It is my hope that the meetings in the future will be as productive of good as this one has been and with these hopes we now stand adjourned.

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