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Wisconsin State Horticultural Society

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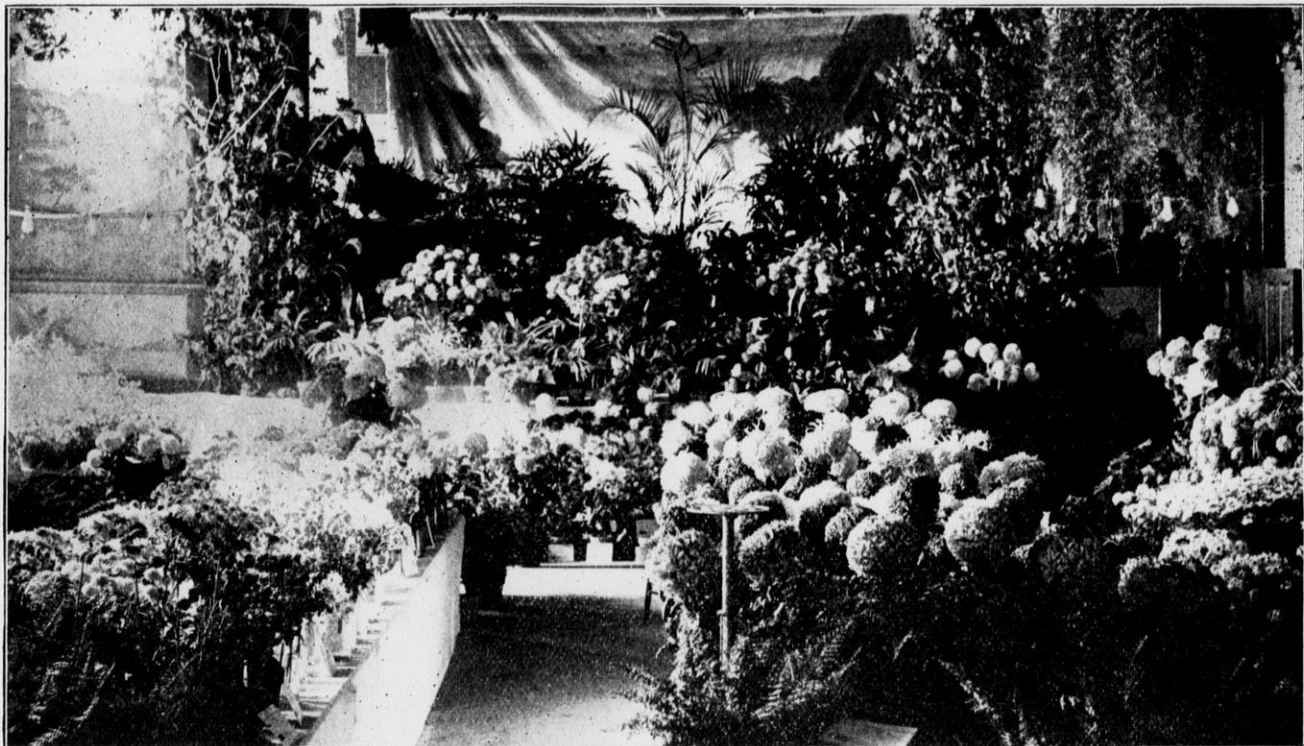
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General view of the chrysanthemum show at Lake Geneva, W's., Nov., 1908. Under the auspices of the Lake Geneva Gardeners' and Foremen's Association.

ANNUAL REPORT

OF THE

Wisconsin State Horticultural
Society

FOR THE YEAR 1909

VOL. XXXIX

F. CRANEFIELD, Secretary

MADISON, Wis.



MADISON

DEMOCRAT PRINTING CO., STATE PRINTER

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MAR 30 1910

LETTER OF TRANSMITTAL.

MADISON, WIS., March 1, 1909.

To His Excellency, JAMES O. DAVIDSON,

Governor of Wisconsin.

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

Respectfully,

FREDERIC CRANEFIELD,

Secretary.

TABLE OF CONTENTS.

	Page
Constitution	vii
Rules and By-Laws	x
Membership roll	xv
Officers and committees for 1909.....	xxxiii
Lists of fruit recommended for culture in Wisconsin.....	xxxv
Trees and shrubs recommended.....	xxxviii
Black list	xliii

SUMMER MEETING.

TRANSACTIONS OF ANNUAL SUMMER MEETING.

Opening Session	1
Address of Welcome, Henry Graas.....	1
Response by President Coe.....	3
Annual and Biennial Flowering Plants: their value in gardening and home decoration, Robert Sampson.....	4
Old Time Favorites, Wm. Toole.....	10
Campanulas, Fox Gloves, and other Biennials: classification and culture, H. W. Illenberger.....	15
Sowing Seeds of Annuals, Albert Meier.....	19
Rational Orchard Management, E. P. Sandsten.....	24
Does Spraying Pay? J. G. Buehler.....	31
Cover Crops: their use in orchard management, J. G. Moore.....	34
Best Varieties of Apples for Commercial Orchard.....	44
Bedding Plants: their use and abuse, Wm. G. MacLean.....	49
Horticulture in Texas and Wisconsin, A. C. Hatch.....	51
Report of Committee on Awards.....	56

WINTER MEETING.

TRANSACTIONS OF WINTER MEETING.

Opening Session	59
President's Address	59
<i>Small Fruit Session—</i>	
Strawberries for 1908, Geo. J. Kellogg.....	62
Fertilizers for Small Fruits, C. B. Cook, Owosso, Mich.....	69
Grape Culture, Edwin H. Riehl, Alton, Ill.....	77
Currants and Gooseberries, E. E. Dunning.....	83

	Page
Farm Betterment for the Wisconsin Farmer, Dan A. Clark.....	88
Improvement of School Grounds, Prof. J. W. Livingston.....	96
Possibilities for Commercial Fruit Growing in Wisconsin, E. P. Sandsten	108
Planting About Rural School Houses, Dan. A. Clarke.....	116
Apples in Monroe County, Fred Muhlenkamp.....	119
Mathematics in Horticulture, D. E. Bingham.....	123
The Newell Apple: origin and history, Wm. Toole.....	127
The Newell Apple, J. S. Palmer.....	129
The Newell Apple: its value in the commercial orchard, A. J. Phillips, D. E. Bingham, and others.....	129
Co-operation in Marketing Fruits, Geo. T. Tippin, Springfield, Mo.	133
The Orchards of Western New York, Prof. W. J. Hamilton.....	151
Arsenate of Lead, H. M. Ashby, Chicago, Ill.....	157
Best Methods of Management for Wisconsin Orchard for the First Five Years	162
Orchard Management for the Second Five Years.....	165
After the Tenth Year.....	170
Shrubs and Ornamentals, E. A. Smith, Lake City, Minn.....	175
Our Duty to the Landscape, M. O. Nelson, Minneapolis, Minn.....	182
<i>Annual Business Session—</i>	
Treasurer's Report	184
Report of the Chairman of the Trial Orchard Committee.....	185
Annual Report of Secretary.....	197
Report of Superintendent of Field Work.....	207
How I Can My Garden Produce for Winter Use, Blanchard Harper	214
Questions and Answers.....	223
Geo. J. Kellogg, A Sketch.....	234
Statistics of Fruit, Sparta Region 1908-9.....	235
Report of Delegate to Minnesota.....	235
Report of Madison Horticultural Society.....	242
Report of Committee on Awards.....	244

CONSTITUTION.

Article 1. This Society shall be known as "The Wisconsin State Horticultural Society" and its location shall be at the city of Madison, Dane County, Wisconsin where its principal office shall be maintained.

Article 2. The object of this Society shall be the advancement of the art and science of horticulture throughout the state.

Article 3. This Society is formed without capital stock.

Article 4. This Society shall consist of life members, annual members, honorary life members and honorary annual members. Life members shall pay a fee of five dollars for such membership. Annual members shall pay an annual fee of 50 cents, except paid members of local horticultural societies who shall pay an annual fee of 25 cents for such membership; wives of such members shall be entitled to the privileges of full membership.

Honorary annual members may, by vote, be elected and invited to participate in the proceedings of the Society. Honorary life members shall be elected by vote of the Society, and shall be distinguished for special merit in horticulture and kindred sciences, or shall confer some particular benefit upon the Society.

Article 5. The general officers of the Society shall be a President, Vice President, Secretary, Treasurer and an Executive Committee, consisting of the foregoing officers and one additional member from each congressional district; a majority of whom shall constitute a quorum at any of its meetings.

The officers aforesaid, except the Secretary shall be elected, by ballot, at the annual meeting, and shall hold office for one year thereafter and until their respective successors are elected. The Secretary shall be appointed by the Executive Committee at its annual meeting after the election of officers and shall hold office for one year thereafter or until his successor is appointed.

Article 6. The principal duties of the general officers shall be as follows:—

The President shall preside at all meetings of the Society and of the Executive Committee, shall exercise a general supervision and

control of the business and affairs of the Society, and shall sign all leases, deeds and instruments for the transfer, conveyance or assignment of the corporate property, and all contracts, papers and instruments necessary or convenient in the transaction of the business of the Society, and when necessary, acknowledge the same.

The Vice President shall act as President in case of the absence, disability or removal of the President.

The Secretary shall conduct the general correspondence of the Society and keep a record of the business and of the proceedings at all meetings of the Society and of the Executive Committee; he shall keep, safely and systematically all books, records, papers and documents belonging or pertaining to the Society or the business thereof; he shall countersign all deeds, leases and conveyances, and, when necessary, acknowledge the same.

The Treasurer shall receive and safely keep all moneys, notes, securities and property of the Society which may come into his hands and shall pay out or dispose of the same only upon such terms and conditions as the Executive Committee may direct or the by-laws provide. He shall keep a correct account of all moneys received and disbursed and shall render such account of the same as shall be required by the Executive Committee or prescribed in the by-laws. And he shall execute a bond to the Society, in such sum, and with such sureties as the Executive Committee shall approve, conditioned upon the faithful performance of his duties, and for the payment and delivery to his successor of all the money and property of the Society in his hands or under his control; which bond when approved shall be filed with the Secretary.

The said officers shall perform such other or additional duties as may be required and any of the duties and powers of said officers may be performed or exercised, so far as is lawful, by such other officers, persons or committees as the Executive Committee may provide.

Article 7. 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 8. The term "county and local horticultural societies" shall include any organization that shall have for its object the advancement of the interests of its members in the growing or sale of horti-

cultural 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 9. The Society shall hold its annual meeting for the election of officers, exhibition of fruits, and discussions, in the city of Madison, Wisconsin. Other meetings shall be held at such time and place as the Executive Committee may direct.

Article 10. Only persons holding memberships according to the regulations of the Society shall be members of it.

Article 11. This Constitution, with the accompanying by-laws, may be amended, at any regular meeting of this Society by a two thirds vote of the members present; provided that such amendment is presented in writing.

RULES AND BY-LAWS

Article I.—Membership.

Sec. 1. The Secretary shall decide upon all applications for membership in accordance with the Constitution and By-Laws of the Society.

Sec. 2. Any member maliciously or intentionally injuring or working in opposition to the Society or its purposes in promoting horticulture may upon return of his membership fee be summarily expelled.

Article II.—Meetings.

Sec. 1. The Executive Committee may fix the time and place for holding the annual meeting of the Society, if the last meeting thereof failed to do so and may call such meeting by giving at least thirty days notice to each member. Such notice shall be given by the Secretary, by mailing the same, postage prepaid, to each member at his last known address.

Sec. 2. Notice of a special meeting shall be mailed to each member at his last known address by the Secretary at least six days before such meeting is to be held. Such notice shall state the business to be transacted and the date, hour and place of meeting, and no business other than that stated in the notice shall be considered at such meeting.

Article III.—Duties of Officers—The President.

Sec. 1. The President shall preside at all meetings of the Society and of the Executive Committee; he shall, with the advice of the Secretary, call all meetings of the Society if the Executive Committee fail so to do; he shall appoint the delegates to the meetings of other State Horticultural Societies; he shall have a general supervision of the business and affairs of the Society, and he shall deliver an annual address upon some subject connected with horticulture.

Sec. 2. He shall sign and acknowledge all leases, deeds, and instruments for the conveyance or transfer of the Society's property,

and all other contracts, papers and instruments necessary or convenient in transacting its business.

Sec. 3. He shall sign all orders drawn on the Treasurer for the payment of bills, accounts and claims audited by the Board of Managers and none other.

Sec. 4. In case of the absence from any cause of both the President and Vice President the members present, if a quorum, shall elect one of their number temporary president.

Article IV.—The Secretary.

Sec. 1. The Secretary shall attend to all the correspondence of the Society; he shall keep a correct and complete record of the business and of the proceedings at all meetings of the members and of the Executive Committee.

Sec. 2. He shall superintend the publication of the Reports of the Transactions of the Society and publish or cause to be published such special bulletins on timely and appropriate subjects and such special reports of the condition and results of experimental work in the Trial Orchards and Trial Stations as the Board of Managers may direct.

Sec. 3. He shall present a detailed report of the affairs of the Society at its annual meeting. He shall endeavor to secure reports from the various committees, and from local societies, of the condition and progress of horticulture throughout the state and report the same to the Society. It shall be his duty 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.

Sec. 4. He shall be Superintendent of all Trial Orchards and Trial Stations. In that capacity he shall supervise the planting and cultivation of, and exercise general control over, the same subject to the directions of the Trial Orchard Committee.

Sec. 5. He shall engross in the general record book of the Society a true copy of the Constitution Rules and By-Laws, and all amendments thereto and all resolutions of the Society and of the Executive Committee.

Sec. 6. He shall keep a record book in which shall be entered the names of all members of the Society from its organization, the place of residence, time of acquiring membership and time of cessation of same.

Sec. 7. He shall notify all persons elected to office within ten days thereafter if such persons were not present at the election.

Sec. 8. He shall keep a book in which a correct list of the property of the Society shall be entered. He shall draw all orders, checks, etc.,

ordered by the Executive Committee or Board of Managers and countersign the same when signed by the President.

Sec. 9. He shall keep a stub or record of all orders, checks, etc., drawn and delivered, showing the date and amount thereof and to whom and for what purpose the same was issued.

Sec. 10. He shall receive all fees for membership, give proper receipts for the same, and, unless otherwise directed by the Executive Committee, shall pay the money to the Treasurer taking his receipt therefor.

Article V. The Treasurer.

Sec. 1. The Treasurer shall, before entering on the duties of his office execute a bond to the Society in such sum and with such sureties as the Executive Committee may direct conditioned as provided in the Constitution.

Sec. 2. He shall receive and be responsible for the safe keeping of all money, notes, securities, credits, etc., of any and every nature, belonging to the Society which shall come to his hands.

Sec. 3. He shall keep proper books of account and a true and complete record of all business transacted by him for the Society; he shall keep proper vouchers for all money disbursed and shall render such accounts and statements of the moneys received, disbursed and on hand, and generally of all matters pertaining to his office as the Executive Committee may require or the By-Laws direct.

Sec. 4. He shall disburse the money of the Society only 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.

Article VI. The Executive Committee.

Sec. 1. The Executive Committee shall have the general care and management of the property affairs and business of the Society, and a majority of its members shall constitute a quorum. The President and Secretary of the Society shall be President and Secretary of the Executive Committee.

Sec. 2. Meetings of the Committee may be called by the President, the Secretary, or by the Secretary on the written request of five members.

Sec. 3. They shall fix the amount of the Treasurers' bond, the number of his sureties and approve the same. They may require any other





Peonies.

officer, agent or employee of the Society to execute a bond and prescribe the amount and conditions thereof, and approve the same.

Sec. 4. They may prescribe such salary or compensation for any officer, agent, or employee of the Society as they may deem proper, but not for a longer term than until the next annual meeting of the members, nor shall any officer of the Society be entitled to or receive any benefit, salary or compensation for, on account of, or during the time that he may be absent beyond the boundaries of the state unless such absence was at the request and on behalf of said Society.

Sec. 5. The Executive Committee shall have the power to remove any officer for official misconduct or neglect of the duties of his office. In case of vacancy in any office, either by resignation, removal or otherwise, such vacancy may be filled by appointment by the said Committee, but such person shall hold office only for the unexpired portion of the term.

Sec. 6. The Executive Committee shall make such rules and regulations for the conduct of the business of the Society, not inconsistent with law, the Constitution, or the Rules and By-Laws, as they shall deem expedient and for the best interests of the Society.

Article VII. Committees.

Sec. 1. 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.

Sec. 2. 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.

Sec. 3. The President shall annually appoint the following standing committees—

Committee on Finance of three members, and one member of the committee on Trial Orchards and Trial Stations, of three members, to be appointed for a term of 3 years, and such other committees as may from time to time be necessary.

Sec. 4. It shall be the duty of the Finance Committee to settle with the Treasurer and to examine and report upon all bills and claims against the Society which may have been presented and referred to them, provided, however, that no member of the Executive Committee shall be a member of the Finance Committee aforesaid.

Sec. 5. The Trial Orchard Committee shall have general control of the locating, planting and care of all trial orchards and trial sta-

tions, and may visit collectively each orchard and 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.

Article VIII.—Miscellaneous.

Sec. 1. The foregoing Rules and By-Laws shall take effect and be in force from the date of their adoption.

MEMBERSHIP ROLL

LIFE MEMBERS.

Wisconsin State Horticultural Society.

Allis, Frank W.	Madison
Ames, W. L.	Oregon
Ayer, Ed. C.	Fontana
Auer, Mrs. Louis.....	Milwaukee
Babcock, O. W.....	Omro
Barnes, A. D.	Waupaca
Bussey, W. P.	Omro
Buckstaff, D. C.	Oshkosh
Brown, F. G.	Madison
Barnett Bros.	Chicago, Ill.
Buehler, J. G.	Richland Center
Bingham, D. E.	Sturgeon Bay
Burnham, O. J.	Richland Center
Chappel, F. H.	Oregon
Chandler, S. S., Jr.	Waupaca
Cole, W. B.	Pleasant Prairie
Converse, D. C.	Ft. Atkinson
Carpenter, L. A.	Fond du Lac
Coe, R. J.	Ft. Atkinson
Carver, N. E.	Bayfield
Cashman, Thos. E.	Owatonna, Minn.
Chapin, S. B.	Lake Geneva
Cleermans, Aug.	Green Bay
Dunn Co. School of Agr. & Domestic Economy.....	Menomonie
Eaton, B. A.	S. Milwaukee
Edwards, F. C.	Ft. Atkinson
Foley, M. F.	Baraboo
France, N. E.	Platteville
Freeman, Roy F.	Racine
Freeman, G. A.	Sparta

Fiebing, J. H.	Milwaukee
Fancher, W. E.	Corliss
Fieldhouse, Wm.	Dodgeville
Gifford, G. P.	Madison
Guilford, W. S.	Pecatonica, Ill.
Hager, W. S.	West Depere
Harden, F. A.	Weyauwega
Harland, F. W.	Milwaukee
Herbst, J. L.	Sparta
Hudnall, Geo. B.	Superior
Hutchinson, C. L.	Lake Geneva
Harris, N. W.	Lake Geneva
Hanchett, W. H.	Sparta
Hildemann, E. S.	Belleplain
Hatch, A. L.	Sturgeon Bay
Henry, M. E.	Oshkosh
Jones, G. D.	Wausau
Jones, John D.	Elk Grove
Joys, A. M.	Milwaukee
Johnson, Franklin	Baraboo
Johnson, Chas. G.	Clintonville
Kellogg, L. G.	Ripon
Kellogg, M. S.	Janesville
Kierstead, E. H.	Lake View, Mich.
Kreutzer, A. L.	Wausau
Koehler, John	N. Milwaukee
Kremers, Prof. E.	Madison
Knight, Wm.	Bayfield
Krienetz, Alfred J.	Milwaukee
La Follette, Robt. M.	Madison
Lathrop, Rev. Stanley E.	Ashland
Loop, A. I.	North East, Penn.
Loope, Dr. T. E.	Eureka
Lyon, Jay F.	Elkhorn
Larson, W. E.	Manitowoc
Marshall, S. H.	Simeon, Va.
Malde, O. G.	Madison
Manitowoc Seed Co.	Manitowoc
McGregor, E. L.	Appleton
Maxson, O. P.	Waukegan, Ill.
Melville, Jas. W.	Chippewa Falls
Melcher, H. C.	Oconomowoc

McGcvein, Wm. P.	Cedarburg
Magnussen, Freder.	Augusta
Nantz, Henry B.	Sauk City
Neison, J. C.	Green Bay
Oleson, James F.	Ripon
Orr, E. D.	Mt. Hope
Peck, Chas. G.	Sheboygan Falls
Pollworth, C. C.	Milwaukee
Palmer, L. H.	Baraboo
Plumb, Wm. H.	Madison
Pirner, John	Waukesha
Palmer, J. S.	Baraboo
Ruste, C. O.	Blue Mounds
Ryerson, M. A.	Lake Geneva
Rentschler, F.	Madison
Raymer, Geo.	Madison
Riordan, D. E.	Ashland
Rcsenow, H. E.	Oconomowoc
Richardson, E. A.	Sparta
Richardson, C. L.	Chippewa Falls
Rounds, Wm.	Baraboo
Seubert, Rev. John	Cologne, Minn.
Steele, W. H.	Pewaukee
Smith, Irving C.	Ashland
Smith, Silas S.	Crandon
Salter, Walter N.	Seattle, Wash.
Saxe, Arthur	Whitewater
Simon, H.	Baraboo
Smith, Geo. B.	Green Bay
Schuette, Aug.	Manitowoc
Simonson, Arthur	Racine
Schroeder, Mrs. F. J.	Milwaukee
Salzer, John A. Seed Co.	La Crosse
Smith, A. J.	Lake Geneva
Taylor, Will L.	Mt. Hope
Tilson, Mrs. Ida E.	West Salem
Toole, W. A.	Baraboo
Toole, Wm.	Baraboo
Tifft, Geo. L.	Milwaukee
Treleven, Jos. D.	Omro
Tittlemore, J. N.	Oshkosh
Underwood, Roy	Lake City, Minn.

Underwood, J. M.	Lake City, Minn.
Van Dyke, Geo. D.	Milwaukee
Vaughn, B.	Grand Rapids
Webb, W. H.	Superior
Williams, Daniel	Oconomowoc
Wright, Arthur	Milwaukee
Williams, Norman G.	Shiocton

HONORARY LIFE MEMBERS.

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

ANNUAL HONORARY MEMBERS.

Clark, Miss Calista	Ashland
Cook, C. B.	Owosso, Mich.
Cowles, Mrs. Wilbur	Baraboo
Harper, Miss Blanchard	Madison
Hey, Chas.	Dixon, Ill.
Herbert, Marie	Chippewa Falls
Livingston, Prof. J. W.	Platteville, Wis.
Nelson, M. O.	Minneapolis, Minn.
Riehl, Edwin H.	North Alton, Ill.
Smith, Mrs. Irving	Ashland, Wis.
Smith, E. A.	Lake City, Minn.
Tippin, Geo. T.	Springfield, Mo.
Treleven, Mrs. Jos.	Omro, Wis.
Young, Miss Ellen	Chippewa Falls, Wis.

ANNUAL MEMBERS.

Adamson, Mrs. C. F.	Madison
Alexson, A.	Sparta
Allen, Jas.	Knowiton
Anderson, J. P.	Ashland
Aznoe, John	Detroit Harbor
Allen, J. B.	Dallas
Athearn, Mrs. J.	Oshkosh
Abbott, Wm.	Ft. Atkinson
Ascott, Wm.	Sparta
Amond, Phillip	Gillette
Allen, M. T.	Waupaca
Ashby, H. M.	Pulman Sta., Chicago, Ill.
Anderson, Feder	Poysippi
Athearn, L. J.	Oshkosh
Bennett, Wm. F.	Chicago, Ill.
Brigham, Chas. I.	Blue Mounds
Brown, A. D.	Baraboo
Brown, A. D.	Poplar
Bennett, A. E.	Grand Rapids
Briggs, Newton	Madison
Brainerd, C. P.	Boscobel
Baker, H. J.	Fond du Lac
Bathrick, D. D.	Chicago
Brown, C. L.	New York, N. Y.
Button, A. A.	Sturgeon Bay
Bennett, A. C.	Grand Rapids
Baldwin, Herbert	Mountain
Bock, J. A.	Manitowoc
Boyles, C. L.	Lake Geneva
Bridge, H. H.	Shiocton
Barden, W. F.	Wauwatosa
Earnes, Geo. F.	Milwaukee
Bohn, B. L.	Wcnewoc
Boerner, A. F.	Cedarburg
Berger, Ole H.	Chetek
Barton, W. E.	Barron
Burg, E. F.	Duluth, Minn.
Bolstad, John	Hillsdale
Beckwith, Howard W.	Lake Geneva
Birmingham, Avery	Sturgeon Bay

Birmingham, Eugene	Sturgeon Bay
Birmingham, Oscar	Sturgeon Bay
Babcock, Chas. L.	Milwaukee
Barnes, R. W.	Waupaca
Borum, G. R.	Barion
Bagnall, R. T.	Sturgeon Bay
Bassett, Arthur K.	Baraboo
Blumer, Fred	Monticello
Block, Albert F.	Markesan
Beck, Peter C.	Racine
Borst, John	Red Granite
Bingham, R. O.	Sturgeon Bay
Beck, Christ	Oshkosh
Braen, Mithias	Alma
Cooper, H. O.	Montello
Cantwell, F. W.	Madison
Cooke, W. D.	Green Bay
Curtis, Geo., Jr.	Madison
Carpenter, Mary	Madison
Carey, C. H.	Redgranite
Crawford, M.	Cuyahoga Falls, Ohio
Crowley, John	Sparta
Currie, James	Milwaukee
Crawford, John	Oconto
Christensen, A. H.	Almond
Christensen, H. C.	Oshkosh
Coldwell, John	Mazomanie
Cheek, A. P.	Baraboo
Clark, M. C.	Madison
Carey, J. E. L.	Redgranite
Carlson, F. O.	Hillsdale
Calkins, Hugh	Antigo
Case, Walter	Rice Lake
Carey, W. H.	Grand Rapids
Christoffer, Harry J., Jr.	London
Carter, Mrs. Eva	Poynette
Conrad, Albert	Waukesha
Cole, V.	Mountain
Cheeseman, F. W.	Sturgeon Bay
Crossman, P. H.	Baraboo
Conkle, Byron	Arlington
Cooley, E. J.	Easton

Doty, E. P.	Janesville
Delwiche, Ed.	Ashland
Doherty, E. G.	Maple
Daub, C. H.	Eau Claire
Dey, Scott S.	Wyocena
Dunning, E. E.	Milwaukee
Deuchart, Geo. L.	Green Bay
Davis, Ward	Oshkosh
Dean, H. F.	Whitewater
Doty, Frank	Egg Harbor
Donnelly, Jas.	Mauston
Dillon, W. E.	Butternut
Dreier, Herman	Cedarburg
Doerr, Geo.	Milwaukee
Detjen, L. R.	Algoma
Davis, Henry R.	Poysippi
Du Bois, E. A.	Oshkosh
Davis, J. A.	Hartland
Dunning, E. C.	Milwaukee
Emery, L. J.	Marshfield
Evenson, Jos. T.	Iola
Engsberg, Conrad	Lake Mills
Ferguson, T. J.	Wauwatosa
Floyd, Mrs. S. G.	Eureka
Fish, L. N.	Sparta
Fish, Elbert J.	Sparta
Fitch, W. H.	Cranmoor
Fargo, Mrs. Enoch J.	Lake Mills
Filkins, C. B.	Bangor
Fenlon, E. W.	Waukesha
Fisher, A. F.	Baraboo
Falge, Mrs. Louis	Manitowoc
Fadner, Paul	Chilton
Flanagan, W. H.	Argyle
Felix, Geo.	Prairie du Sac
Follstad, Anton	Elcho
Feuerstein, J.	Sturgeon Bay
Fadness, Mrs. Allie	Doylestown
Fleming, J. R.	Merrimac
Falarsh, Frank	Peshtigo
Gabriel, H.	Blanchardville
Gilles, Peter	Milwaukee

Gilley, Albert	Stoughton
Gonzenbach, Ernest	Sheboygan
Gentle, Geo. R.	Janesville
Grape, John	Waukesha
Goldfarb, S.	Baraboo
Grant, B. H.	Monico
Gerbracht, J. H.	Spring Grove, Ill.
Goedjen, Henry	Manitowoc
Gaynor, J. A.	Grand Rapids
Gillen, Dr. F. C.	Milwaukee
Goodnow, E. W.	Lansing, Mich.
Gilbert, R. W.	Sturgeon Bay
Graase, Frank N.	Sturgeon Bay
Goff, Moulton	Madison
Gorski, Mike	Milwaukee
Grasselli Chemical Co.	Milwaukee
Gardner, E. J.	West Depere
Griffin, Joseph A.	Madison
Harris, S. H.	Medford
Howie, John	Waunakee
Hatch, C. A.	Richland Center
Hatch, L. M.	Big Bay, Mich.
Hahn, H. J.	Sturgeon Bay
Hodge, W. A.	Waunakee
Harper, C. L.	Madison
Harris, H. H.	Warrens
Huntley, Mrs.	Cuprum, Idaho
Howlett, Mrs. D. D.	Oshkosh
Holmes, J. B.	Walworth
Hinrichs, Ernest	Reedsburg
Hood Bros.	Baraboo
Hirsch, B.	Washburn
Hopkins, A. W.	Madison
Harmon, Harry	Madison
Haentz, E.	Fond du Lac
Hegtvedt, E. S.	Chetek
Heider, H. W.	Barron
Hoesley, Henry	Turtle Lake
Howard, J. A.	Hammond, Minn.
Hickok, J. W.	Cameron
Houltman, Jno.	High Bridge
Hale, O. C.	Tunnel City
Hill, Geo. C.	Rosendale

Hield, N. E.	Janesville
Hatch, M. W.	Sturgeon Bay
Hahn, Michael	Sturgeon Bay
Hackett, Geo. W.	N. Freedom
Hanson, John	Sturgeon Bay
Halverson, Melvin E.	Argyle
Hebron, W. W.	Sparta
Hoerres, Frank	Milwaukee
Hillier, B. S.	Sparta
Huss, Geo. M.	Minneapolis
Howe, Jas. R.	Milwaukee
Hamlyn, W. W.	West Bend
Ihrig, J. J.	Oshkosh
Irwin, R. A.	Lancaster
Isaacson, Chas.	Poplar
Isom, R. A.	Madison
Jeffrey, Geo. J.	Milwaukee
Jones, Geo. G.	Neenah
James, P. T.	Bloom City
Jorgenson, Geo.	Poysippi
Jordan, Mrs. E.	Antigo
Johnson, Hans J.	Osseo
Jones, E. E.	Rockland
Jones, Mrs. A. C.	Eureka
Jackson, C. H.	Oconomowoc
Jacob, Nic. C.	Sawyer
Jacob, Edward	Sawyer
Jones, Geo. H.	Oshkosh
Kelly, A. N.	Mineral Point
Kieffer, M.	Fredonia
Kauffman, H.	Marshfield
Klosowski, Rev. M.	Plover
Kull, Andrew	Lake Geneva
Kruschke, J. W.	Cranberry Center
Kampen, H. W.	Poynette
Kirwan, Michael	Manitowoc
Kneser, J.	Barrington, Ill.
Kiloy, Daniel	Twin Bluffs
Koschin, Gustav	Milwaukee
Knox, James	Alpena, S. D.
Koepp, W. R. R.	Barron
Knutson, O.	Eau Claire
Kahl, Otto	Prairie Farm
Klann, Wm. E.	Milwaukee

Koegel, Alois	East Milwaukee
Kraut, Otto	Milwaukee
Knutson, E. L.	Wautoma
Kellogg, W. E.	Solon Springs
Kellogg, Karl M.	Solon Springs
Leverich, J. W.	Sparta
Loewe, Arthur P.	Milwaukee
Larkin, Danford.....	Sturgeon Bay
Lemon, R. K.	Mitchelville, Iowa
Laue, A. F.	Milwaukee
Lenicheck, F. J.	Milwaukee
Larson, Martin	Sparta
Lasche, A.	Milwaukee
Lohberger, Albert	Bennett
Loewe, Ed. C.	Milwaukee
Laird, Alex.	Shiocton
Leonard, Wm.	Jefferson
Lippold, John W., Sr.	Milwaukee
Lillesand, L. E.	Cambridge
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Lathrop, A. T.	Madison
LaFay, Will	Stoughton
Lehmann, Mrs. A. W.	Woodland
Moyle, W. J.	Union Grove
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Mueller, Wm. E.	De Forest
Mason, E. L.	Hillsboro
Mack, S. B.	Monroe
Moore, J. G.	Madison
Muhlenkamp, Fred	Sparta
Marsh, H. F.	Antigo
Mische, E. T.	Portland, Oregon
Marken, Otis	Valders
Meller, C. L.	Fargo, N. D.
Mallory, N. V. S.	Shiocton
Marsh, W. H.	Antigo
Melcher, W. S.	Hartford
Moore, Henry G.	Mauston
Moore, V. V.	Baraboo
Marshall, J. B.	Poynette
Miller, A. A.	Ashland
Mulligan, Mack	Barron

Moran, Mrs. John.....	Omro
Marshall, W. E.	Sturgeon Bay
Miles, J. J.	Ashland
Marken, Richard L.	Valders
Moffatt, Jno.	Poysippi
Mair, Frank P.	Milwaukee
McKay, W. G.	Pardeeville
McLay, Geo. R.	Janesville
McMahon, W. O.	Arkansaw
McGaffey, Ancil	Meadow Valley
McLeod, J. N.	Platteville
McCance, Wm. J.	Sparta
McCue, O. E.	Poysippi
Noyes, J. B.	Oshkosh
Naud, Geo. R.	Gordon
Nienaber, B. H.	Manitowoc
Nelson, Wm.	Oshkosh
Ovenden, Frank	Madison
Oakley, Mary	Madison
O'Brien, Ellsworth	Auburndale
Otis, B. F.	Sturgeon Bay
Oviatt, Dr. C. W.	Oshkosh
Otterhalt, Henry	Chetek
Pearson, C. L.	Baraboo
Peterson, P. A.	Poplar
Paige, Mrs. W. S.	Madison
Pfefferle, S.	Appleton
Pederson, C. T.	Prairie Farm
Pelton, Geo.	Reedsburg
Post, Lawrence	Mt. Horeb
Pfaender, Wm., Jr.	New Ulm, Minn.
Powell, A. W.	Lead, S. D.
Pederson, Peter	Eleva
Port, Mike	Grafton
Pelton, M.	Reedsburg
Plumb, C. M.	Lesterville, S. D.
Parks, W. S.	Thorp
Patterson, Chas.	Franksville
Potter, Henry D.	Baraboo
Potter, Geo. F.	Madison
Pierce, N. P.	Oshkosh
Phillipson, C.	Oshkosh
Reek, Joseph	Neenah
Rentschler, Geo.	Madison

Reeve, Dr. J. S.	Appleton
Ramsey, Mrs. Robt.	Baraboo
Rosenow, Arthur	Oconomowoc
Ryan, Sam J.	Appleton
Reis, John	Ithaca
Reis, Albert	Ithaca
Rahr, Wm.	Manitowoc
Rounds, Mrs. S. A.	Eureka
Rogers, A. J., Jr.	Madison
Rockmann, N. M.	Barron
Rasmussen, N. A.	Oshkosh
Rhodes, Ed.	Hortonville
Rice, Wm. V.	Elmwood
Reinking, A. P.	Baraboo
Richmond, Susan	Madison
Richter, W. A.	N. Milwaukee
Ravn, L. H.	Barron
Rasmussenm, Fred	Barron
Rhodes, B. F.	Barron
Roach, Thos.	Fond du Lac
Rhodes, Thos. W.	Waukesha
Reichard, Ed.	Sturgeon Bay
Richards, M. W.	Madison
Rice, A. S.	Genoa Junction
Reupert, Walter.	Milwaukee
Reinhardt, Walter.	Milwaukee
Riordan, T. P.	Suring
Rouse, Mrs. Nelson	Oshkosh
Rundell, A. E.	Livingston
Rausher, Mrs. J. C.	Merrill
Smith, B. H.	Tiffany
Spry, John	Ft. Atkinson
Sandsten, Prof. E. P.	Madison
Sperbeck, M. V.	Oshkosh
Skewes, E. B.	Union Grove
Simonson, L. A.	Duluth, Minn.
Smith, Mrs. J. Q.	Madison
Schuck, John B.	Milwaukee
Sansum, David	Baraboo
Smith, S. L.	Oshkosh
Stead, Mrs. Jos.	Omro
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Schneider, A.	Marshfield

Stone, A. L.	Madison
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Sorenson, P. J.	Somers
Steel, Lillie.....	Milwaukee
Shuckhart, H.	Bloom City
Shellenberger, C. F.	North Freedom
Sullivan, E. W.	Alma Center
Stone, A.	Barron
Swan, Chas.	Barron
Stirdivant, Geo.	Sheboygan Falls
Spoerl, Jos.	Antigo
Schnitzler, Jno. L.	Milwaukee
Siegel, Tony	Milwaukee
Smith, John Mills	Ashland
Spencer, L. E.	Wausau
Swan, P. G.	Sturgeon Bay
Simmons, Fred G.	Milwaukee
Stiehl, John D.	Sparta
Stephenson, H. S.	Sturgeon Bay
Sternberger, Chas.	Milwaukee
Stein, Geo.	Milwaukee
Smith, Rev. L. C.	Waukesha
Sheppard, Nelson	Oshkosh
Schanezer, Jos. P.	Wabeno
Smith, A. J.	Sawyer
Telfer, Joe	Ft. Atkinson
Ten Eyck, A. A.	Brodhead
Timms, C. J.	Ripon
Trettin, A. H.	Milwaukee
Tenney, H. A., Jr.	Madison
Torgersen, Theo.	Coon Valley
Tiefenthaler, G. E.	Milwaukee
Tulledge, Everett G.	Oakfield
Thurston, K. W.	Sparta
Tucker, W. O.	Union Grove
Timan, Mrs. Chas.	Eureka
Thatcher, O. M.	Weblake
Toole, E. H.	Baraboo
Thompson, W. E.	Somers
Trim, Geo.	Galesville
Toogood, V. R.	Lake Mills
Utter, Delbert	Lake Beulah
Umlauf, Rudolph	Dorchester

Unger, Ed.	Milwaukee
Ullsperger, H. W.	Algoma
Van Orden, J.	Baraboo
Williamson, W. D.	Madison
Wayne, Joseph	Boscobel
Williams, W. D.	Sparta
Wood, C. L.	Sparta
Wright, Geo. S.	Eau Claire
White, W. F.	Antigo
Wengler, M. B.	Milwaukee
Wilson, B. F.	Wausau
Welke, Sam	Fall Creek
Weber, Frank	Ft. Atkinson
Warner, Ernest	Madison
Walker, Geo.	Sawyer
Wegner, Wm. E.	Watertown
Wolla, Jno. H.	Cameron
Wright, Wallace	Antigo
Worman, M. A.	Chetek
Weigel, Emil	Milwaukee
Yahr, Solon	West Bend
Young, A. W.	Chippewa Falls
Zillmer, Wm. C.	Brookfield
Zabel, M. A.	Sharon

BARRON COUNTY LOCAL SOCIETY.

Barron, Wis.

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F. H. Burdick	E. McKinney
L. S. Cheney	W. L. Morse
C. T. Dillon	Chas. Oleson
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J. Ducklow	Nelson Stebbins
E. J. Edwards	Chris. Swartz
John Eades	I. L. Van Sickle (Dallas)
N. S. Gordon	Louis Vol
Fred W. Hoxie	Fred Wickern

BAYFIELD PENINSULA HORTICULTURAL SOCIETY.

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Chas. G. Anderson	F. N. Lang
N. Bachand	W. Leniack (Cornucopia)
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Currie G. Bell	Jas. Long
Donald C. Bell	Chas. Lucia (Cornucopia)
R. D. Bigelow (Ashland)	C. J. McConnell (Superior)
J. E. Bissell (La Pointe)	G. A. McHenry
F. Boutin, Jr.	Paul Meitke
H. W. Boutin	E. A. Miller
S. L. Boutin	Einer Miller
Chas. Boheme	Otis G. Mills
B. J. Bracken	A. J. Mussell
Fred Brauns	A. Nelson
E. K. Brigham	Hugo Nelson
Josuea R. Brown	Harvey Nourse
Ben Carver	Laurie Nourse
L. S. Carver	C. A. Nye (Cornucopia)
N. E. Carver	D. W. O'Connell
F. S. Cooley	J. P. O'Malley
Geo. Crawford	Geo. A. Packard
L. E. Davis	A. J. Peterson
Peter DeBraie	Jos. Peterson
W. W. Downs	G. A. Pine
Steve Drowns	E. E. Powell
Albert Egger	W. S. Powell
D. K. Emmons	Roy C. Rowley
John Engblom	F. J. Ruhlemama (Cornucopia)
Jos. Feldmier	A. B. Sayles
P. F. Flake	Herman Sense
O. Flanders	Louis Shapario
W. H. Fleck (Cornucopia)	W. H. SinClair
John Frege	H. V. Stahl
Ole Hadland	S. N. Strand
Jno. Hagberg	Frank Stark
Nels Hagman	Emil Swanson
H. C. Hale	J. H. Sykes
Herman E. Hanchett (La Pointe)	Jas. Theobald
H. H. Hannum	A. M. Thompson
J. F. Hauser	G. W. Thompson (Cornucopia)

Burt P. Hill	Aug. Turnquist
Otto Hofele (Cornucopia)	L. M. Tyler
Frank Holston	C. Vollenweider
Peter Howder	O. J. Vorous
R. Inglis	Henry Wachsmuth
F. Marion Jewell	H. J. Wachsmuth
C. E. Johnson	John Walters
Cever Johnson	Sam Wasmuth
Jacob Johnson	W. H. Weber
M. Johnson	G. W. Weidman (Chicago)
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J. A. Keith	Tom Whalen
R. S. Keith (Des Moines, Ia.)	T. F. Wieland
Wm. Knight	A. H. Wilkinson
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GAYS MILLS LOCAL.

Gays Mills, Wis.

F. T. Lowe	Geo. T. Atwood
Mr. Lewis	F. F. Bell (Readstown)
J. W. McCullick	S. L. Brown
M. McGarigle	F. C. Brown
H. P. Mitchell (Mt. Sterling)	E. G. Briggs
Mike Murphy	Wm. Dupee
O. R. Pomeroy	J. A. Hays
H. R. Pomeroy	W. C. Hays
E. B. Purrington (Mt. Sterling)	Chas. Johnson
Albert Rounds	P. K. Kinder
C. J. Rounds	L. A. Lee
O. A. Sherwood	L. G. Lester
A. L. Stowell	O. A. Lester
Ed. Wallin (Bell Center)	

LAKE GENEVA GARDENER'S & FOREMAN'S ASS'N.,

Lake Geneva, Wis.

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Miles Barratt	Chris Madison
C. H. Barry	John Moier
Geo. Barlow	Jas. Livingston

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Julius Kutz	Herman Yekes
Wm. Longland	C. Shilipp
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Dr. F. F. Bowman	Mrs. W. A. P. Morris
Preston W. Brown	O. S. Norsman
E. R. Balsley	Perry Outhouse
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F. B. Drake	Mrs. L. F. Porter
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Robt. Lamp	Mrs. A. O. Wright
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MANITOWOC LOCAL SOCIETY.

Manitowoc, Wis.

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John Ewen	Eli Peltier
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F. A. Huebner	Hugo Wilkowsky (Mishicot)
John Jarr	Wm. Willsmann (Two Rivers)

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Vice-President, A. J. Smith.....	Lake Geneva
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COMMITTEE ON TRIAL ORCHARDS.

R. J. Coe, term expires.....	1912
L. G. Kellogg, term expires.....	1911
D. E. Bingham, term expires.....	1910

LOCATION OF TRIAL ORCHARDS.

Wausau, Marathon county, 10 acres.....	Established 1897
Medford, Taylor county, 3 acres.....	Established 1903
Poplar, Douglas county, 7 acres.....	Established 1904
Maple, Douglas county, 3 acres.....	Established 1903
Barron, Barron county, 5 acres.....	Established 1906
Manitowoc, Manitowoc county, 5 acres.....	Established 1907
Gays Mills, Crawford county, 5 acres.....	Established 1907
Sturgeon Bay, Door county, 5 acres.....	Established 1903
Whitehall, Trempealeau county, 5 acres.....	Established 1908
Lake Geneva, Walworth county, 5 acres.....	Established 1908
Sparta, Monroe county, 1 acre (Grape station).....	Established 1908

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),	Autumn Strawberry,	Dudley,
Fall Orange.	Fameuse (Snow),	Golden Russett,	Hibernal,
Lowland Raspberry,	Longfield,	Lubsk Queen,	McIntosh,
Malinda,	McMahan,	Newell,	Northwestern Greening,
Oldenburger (Duchess),	Patten Greening,	Perry Russett,	Plumb
Cider,	Scott,	Tetofski,	Talman (Sweet),
Utter,	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 extreme southern part of the state and in the counties bordering on Lake Michigan. Baldwin, Eureka, Fallwater, Gano, King, Northern Spy, Pe-waukee, 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, Longfield, McMahan, McIntosh, Northwestern Greening, Oldenburger, Scott, Utter, Wealthy, Yellow Transparent.

APPLES (Five Varieties for Farm Orchard).

Northwestern Greening, Oldenburg (Duchess), Talman (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, Wen-
dorff, Zettle Bellflower.

CRABS.

Brier Sweet, 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, Bur-
bank.

CHERRIES.

Early Richmond. Montmorency.

GRAPES.

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

BLACKBERRIES.

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, *War-
field.

TWO VARIETIES STRAWBERRIES FOR FARM GARDEN.

Dunlap, *Warfield.

RASPBERRIES.

Black: Conrath, Cumberland, Gregg, Older.
Red: Cuthbert, Loudon, Marlboro.
Purple: Columbian.

CURRANTS.

Red: Red Cross, Red Dutch, Long Bunch Holland, Victoria.
White: White Grape.
Black: Lee's Prolific, Naples.

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.

Anjou, Bartlett, Clairgeau, Clapp Favorite, Early Berga-
mot, Flemish Beauty, Idaho, Kieffer, Laurence, Louise,
Seckel, Sheldon, Vermont Beauty.

TREES AND SHRUBS RECOMMENDED

EVERGREENS.

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

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.

Crab (native), also Bechtel's double flowering crab, Cut-leaved Weeping Birch, Tartarian Maple, Ginnala Maple, Kentucky Coffee Tree, Mountain Ash, Weeping Willow, Russian Mulberry.

LIST OF SHRUBS RECOMMENDED.*

Scientific Name.	Common Name.
<i>Berberis Thunbergii</i>	Thunberg's Barberrry
<i>Berberis vulgaris</i>	Common Barberrry
<i>Berberis vulgaris</i> var. <i>atropurpurea</i>	Purple-leaved Barberrry

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

<i>Corylus maxima</i> var. <i>purpurea</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 Weigela
<i>Eleagnus argenta</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>Shepherdia argentea</i>	Buffalo Berry
<i>Spiraea Bumalda</i>	Bumalda Spiraea
<i>Spiraea Bumalda</i> var.	Anthony Waterer Spiraea
<i>Spiraea Billardii</i>	Billard's Spiraea
<i>Spiraea Douglassi</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.

Five hybrid perpetual roses for the garden: Gen. Jacqueminot. Magna Charta, Margaret Dixon, Mrs. John Laing, Paul Neyron.

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
 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.

Barberry, purple
 Crandall Currant
 Silver Berry
 Honeysuckle, Blue
 Strawberry Tree
 Japanese Rose
 Spiraea, Billard's
 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.

Scientific Name.	Common Name.
<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 HARDY 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.

Scientific Name.	Common Name.
<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>	Virginia 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</i> Hort).....	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.

TRANSACTIONS

OF THE

Wisconsin State Horticultural Society

SUMMER MEETING.

STURGEON BAY, WIS., AUGUST 26, 1908.

MORNING SESSION.

The meeting was called to order by the President, Mr. R. J. Coe, at 11 o'clock.

After the invocation by Rev. Sam. Groenfeldt, the President introduced Mr. Henry Graas, of Sturgeon Bay, who delivered an address of welcome.

ADDRESS OF WELCOME.

MR. HENRY GRAAS, of Sturgeon Bay.

“Who comes to Para is glad to stay,
Who drinks Assai goes never away.”

So sang a celebrated guest of that famous South American,
Brazilian seaport city.

And what is true of Para is true of Sturgeon Bay. I have yet to hear of a visitor who sojourns with us for any length of time; who roams our fields and forests, sails, bathes and fishes in our waters and breathes the pure air and basks in our bright sunshine; while, if they do not stay, they come back to us year after year for their rest, pleasure and recreation. And I trust many of our visitors will imbibe very freely in these gifts of nature and long to be one of us.

To the Agriculturist and Horticulturist this is indeed God's chosen country. While gardening and the raising of small fruits and flowering plants are still in their infancy in this county, I am sure you visitors with us today will agree with me, as you visit our gardens and orchards, that a bright future awaits this county in this respect.

Situated as we are, between two bodies of water, they temper the sun's rays, give us heat in the cool night, furnish moisture as refreshing as summer showers and protect us from sudden frosts, all of which goes to make a climate suitable for your line of pursuit.

In behalf of the citizens of this city and county, I extend a hearty welcome to our worthy visitors; a welcome to a city whose cleanliness is marked at once by every stranger; whose modern buildings bring forth words of praise, and we are proud of them, because most of them are built of Door county stone.

We welcome you to a city where hard times are never felt. While other cities are now complaining of financial and business stringency and hard times, with an army of unemployed, here there is being erected a \$20,000 electric light plant, a \$50,000 schoolhouse, a \$20,000 sheriff's residence and jail.

We welcome you to a city whose quarries are the best in the state, and as extensive as any, and are working night and day to fulfill contracts. While we have no gigantic factories of which we can boast, we have that which is far better—a rich agricultural district about us. Factories burn, shut down and have strikes and lockouts, but our farms and farmers give us a stability that no commercial enterprise can give us.

I congratulate you on the work in which you are engaged; it must be a pleasurable vocation. It is due to your Society that Door County today occupies the position that it does in horticulture, for we have with us one of the foremost of your Society,

Mr. Hatch, and if I were to tell you what he has done for Door County, it would take me an hour, but suffice it to say that we are glad to have him.

I am sure that many of our people who are agriculturally and horticulturally inclined will receive vast benefit from your session, and may the great State of Wisconsin and all her people aid you in this magnificent work in which you are engaged.

RESPONSE.

President R. J. Coe.

Personally, it has long been my desire to visit the Sturgeon Bay country. I have heard of it ever since Mr. Hatch first came here. I have heard of it from others besides Mr. Hatch, and I am sure that every member of the State Horticultural Society has had that same desire, and now we are here with you today and a part of tomorrow, and I assure you, Mr. Speaker, that we accept your very hearty welcome and I am sure we will enjoy ourselves, and we will try to leave Sturgeon Bay feeling that the State Horticultural Society is of some value to the State; that the State Horticultural Society does carry an influence with it wherever it is known and wherever we go. With these few words I again thank you for the very cordial and hearty welcome you have given us.

We will now proceed with the regular morning's program, which is given up mainly to flowers, as you will see.

ANNUAL, AND BIENNIAL, FLOWERING PLANTS;
THEIR VALUE IN GARDENING AND HOME
DECORATION.

ROBERT SAMPSON, Delegate Lake Geneva Society.

Mr. President, Ladies and Gentlemen: The subject of my paper is "Three favorite flowers, asters, sweet peas and pansies."

ASTER CHINA (*Callistephus Chinensis*).

This favorite annual is a native of China. It was first introduced into Europe about 1731 by R. P. D'Incarville, a Jesuit Missionary in China. At that time, it was a single flower.

Phillip Miller, the famous gardener and botanist of Chelsea, England, received seed of the single white and red in 1731, evidently from France, single blue in 1736. In 1752, he obtained seeds of the double red and blue, and in 1753, of the double white.

The species were well known to American gardeners at the opening of the 19th Century.

The first great evolution in Asters was made in Germany, where a good deal of the seed comes from.

The present range of color, and types in China Asters, is large and to classify them all is quite a task, but the following types are good for all practical purposes—

Comet, Ostrich Plume, Paeony Flowered, Quilled, Chrysanthemum Flowered, Crown, Hohenzollern, Victoria, Branching, Washington and Queen of the Market. By growing this list you can have a succession of bloom from June until frost.

All colors can be had in these varieties except a good yellow, which I have not seen up to the present writing.

The seed of early varieties should be sown under glass in one form or other in March or April. Seedlings should be transplanted two inches apart each way, in shallow boxes. Plant out of doors as soon as soil and weather permits; seed should also be sown out of doors and then transplanted.

Asters will grow on almost any soil, but for best results, the

ground should be well manured and dug deep. They should be kept well hoed through the growing season and kept free from all weeds.

SWEET PEAS, (*Lathyrus Odoratus*).

The sweet pea has been traced back to 1650. The origin of the sweet pea is divided principally between Sicily and Ceylon, the original purple variety being native to the former Island and Sardinia. Sicily was also the native habitat of the white variety. Testimony also points to Ceylon as the home of the original pink and white variety, known as the Painted Lady; the original red also came from Ceylon.

Father Franciscus Cupani, an Italian monk and botanist, is credited with being the first cultivator of this flower at Panormus in Sicily, in 1699 and the seed of the purple variety was sent by him to England and elsewhere.

The seed of sweet pea became an article of commerce as early as 1730. In 1793, a London seed catalogue listed four varieties, Black, Purple, White and Painted Lady. About 1876, Henry Eckford of Shropshire, England, took up the sweet pea. He began with six or seven common sorts and up to 1898, put out about 75 varieties. Then his work of 22 years began to be appreciated, and a number of other good workers came into the field.

J. C. Schmidt of Germany, and Laxton of England did good work in originating new varieties.

When it was found that they could raise good sweet pea seed in California, it brought this State as the producer of sweet pea seed for the whole world. Think of a single field with four hundred acres of sweet peas in bloom at one time. In 1893, the first dwarf sweet pea was found in California, color white. Now it comes in all colors. A good many of strong American varieties have come out, also the Spencer type of Orchid flowering.

I will name a few of the varieties that do well with us in this locality.

For White—White Wonder, Dorothy Eckford, Nora Unwin.

For Pink—Countess Spencer, Gladys Unwin, Mrs. Alfred Watkins, Royal Rose.

For Lavender—Dorothy Tennant, Lady Grisel Hamilton.

For Yellow—Hon. Mrs. E. Kenyon.

For Scarlet—King Edward VII.

For Crimson—Salopian.

For Blue—Navy Blue, Countess of Cadogan.

For Purple—Duke of Westminster.

Pink and White—Blanch Ferry (extra early).

Pink and White, (Earliest of all).

Rich Orange Salmon, Evelyn Byatt.

Cultivation: The sweet pea likes a rich, rather heavy soil to get the best results—for early peas the ground should be prepared in the Fall, the soil should be dug up deep, and good rotten manure spaded in. This should be put on as heavy as possible, so that it is under the ground, as early in the Spring as possible. Open up a trench about 3 inches deep, sow the seed, and then cover up with soil which has been kept under cover for that purpose, one inch deep. Then in the month of June, fill up trench; all sweet peas will do better if they are brushed, than if you use wire for a trellis. Late sowings are never as satisfactory as early sowings—the first part of April being late enough.

PANSIES, (*Viola Tricolor*).

Pansy: The old name Heartsease, which means Remembrance.

Parkinson first speaks of the pansy in 1629. The pansy is generally considered to have originated from *Viola Tricolor*, a small perennial violet native to the cooler parts of Europe. Gerard gives a description of pansies in 1587, Heartsease or *Viola tricolor*.

Pansies were first improved from the original type in Great Britain, and new varieties were gradually brought out with larger flowers and varied colors.

England and Scotland held the honors for good pansies until about 1778, when three French Specialists, Bugnot of St. Brieuc, Cassier and Trimardeau of Paris made immense strides in developing the pansy. Trimardeau created a new race with immense flowers and a very hardy constitution. His strain crossed with Cassier and Bugnot easily superseded the English strains.

The Pansy, though a perennial, is generally treated in this country as an annual.

For early spring flowering, the seed is generally sown in the latter part of July, and transplanted about 8 inches to one foot apart to the place where they are to flower, the following spring, and protected through the winter with a covering of leaves, coarse manure or slough hay.

Pansies do best in a clayey soil well enriched with rotten manure—frequent sprinklings to keep the ground and foliage moist will be of great benefit to them.

For summer flowering, pansies can be sown any time from February until June and will give a succession of bloom until frost.

As to varieties, they are very numerous as to size and color. It is best to get pansy seed from some one who makes a specialty of growing same, as it needs a good deal of judgment and work to keep the strains up to the standard.

DISCUSSION.

Mrs. Barnes: I would like to know the cause of and the remedy for Branching Asters blighting. (Showing a blighted plant.)

Mr. Sampson: It is a hard question to answer. I think it comes from the condition of the soil that it is planted in, the soil not being rich enough.

Mrs. Barnes: The soil that that grew on is very rich.

Mr. Sampson: I could not give you a satisfactory answer to that. I have some like that, but there are so many causes, that I really could not give you one.

The President: Is there anyone here that can give a cause for this. It seems to be a blight.

Mrs. Howlett: A great many of our flowers are in that condition. In the early part of the season it was very wet and in the latter part of the season it has been very dry, and I lay it to the state of the weather that caused the asters to blight, as they have a very poor root growth, and even the weeds have a poor root growth. They did not take hold of the soil; one can pull

the plants and weeds out easily. When it was so very wet the plants did not make a good growth in the early part of the season, in the latter part of the season it was so dry that many dried up unless one carried water, and even carrying water does not do much good when there is such a stunted growth.

Mr. Sampson: Asters will not do well two or three years in succession on the same ground. We have found that very often to be the case.

Mr. Longland: It may come from watering the surface of the soil.

Mr. Tiplady: It has been my observation in connection with asters that the Comets are most susceptible to that disease. At present at Lake Geneva an entire patch of Comets was entirely eaten up with that fungous disease, I believe it is, whereas the Victorias were not affected. Of course that is a weakness there, and I believe it is as Mrs. Howlett says, that that extreme moisture in the spring would naturally cause a weak development of the root, and when the hot weather came, it would leave the plant in a condition to be attacked by the fungus, which is very common in asters.

Mrs. Howlett: This variety is the Violet King, and I find I have as many of the Branching varieties as I have of the Comet that are in this condition.

The President: We will take up the discussion on Sweet Peas. Any question or remarks on this branch of the subject?

Mrs. Barnes: I would like to ask why Sweet Peas get yellow half way up the vine?

Mr. Sampson: That is a fungous disease, and very often late plantings will have that more than the early plantings.

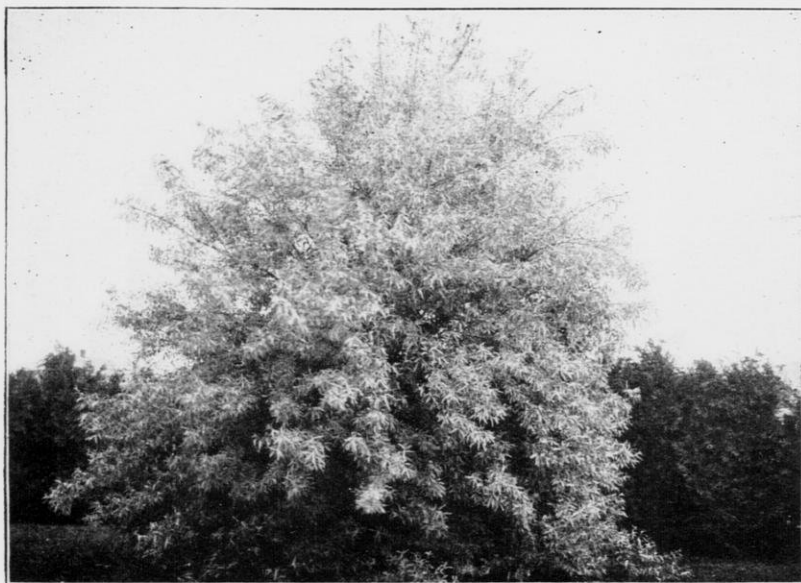
Mr. Toole: I would like to ask what can be done against the aphid on Sweet Peas.

Mr. Sampson: The best remedy I have found is a compound called "Excel All;" it is a mixture made from nicotine, spraying Sweet Peas with that will kill every aphid that there is on them. I have sprayed mine twice. Just one spraying will fix the aphid. That is the best stuff I have ever found.

A Member: Is there a preparation of nicotine and oil?

Mr. Sampson: I do not know if there is any oil in it; it is an English preparation.

Mrs. Barnes: Is there any remedy for this fungus?



Russian Olive.

The soft drab or gray of the Russian olive adds a touch of beauty to any landscape.



Clematis recta.

A dwarf, free-blooming clematis. Herbaceous in character.

Mr. Sampson: Yes, the Bordeaux mixture is good for fungus, even on Sweet Peas, if they are sprayed soon enough.

Mrs. Barnes: Do you ever spray them before you see it appear?

Mr. Sampson: Yes, very often; the spraying has come to be of just as much importance as planting; you must spray to keep these diseases away.

Mrs. Barnes: How about the Aster? Do you think spraying with Bordeaux mixture would help the Aster?

Mr. Sampson: Well, I would not know what to say; I would have to leave it to some one better posted than myself. We had a meeting of scientific men and one man told us he had lost four thousand and we could not get at any direct cause, but this man thought it was caused by his land not being rich enough. They were planted in a border where he had them for several years. Then he had several thousand in his vegetable garden and he said they were all right. He therefore thought it was caused by his land being poor.

Mrs. Barnes: How long can you raise pansies in the same bed without changing and have them good?

Mr. Sampson: I think if the bed is prepared well in the fall, you can grow them a number of years.

Mr. Long: I would like to know how we can get pansies to bloom for Decoration Day?

Mr. Tiplady: Pansy seed sown in July, protected over winter, will be in fine shape for Decoration Day.

The President: Mr. Sampson endorses that.

Mr. Hatch: May I illuminate this subject with another thought that came within my experience. I love pansies; I love them because they come so early in the season, love them for their intrinsic beauty. I had failed for several years to winter the plants over; I did just as the last speaker said, but I failed utterly. Last winter I placed some stakes that I had in my wood-hauling rack along my pansies and put slats across them; that supported my litter and did not smash the life out of the pansies, and I succeeded very well. Another thing you can do with pansies that I have not heard mentioned; you can stimulate them with land plaster, common gypsum; it will stimulate them just as it will a clover plant. If you have never used it on pansies you will be delighted; a little dusting will give wonderful results.

Mrs. Barnes: I would like to ask when you dust the pansies?

Mr. Hatch: Whenever you have anything to grow or encourage, feed with it.

Mrs. Barnes: After the pansies are in blossom, would you use gypsum?

Mr. Hatch: No, no, if you are going to keep your pansies in bloom, you must cut them before they go to seed, and there is this about the pansy, the more you cut, the better your plants will thrive, and anybody that is stingy with flowers will not have any flowers; so cut them off freely and do not allow them to go to seed. As far as land plaster is concerned, just as soon as you have a plant started, encourage it. I have never found in cultivating a plant any time that is so valuable or critical or useful as to encourage it when it is small. You want to take your baby plants and nurse them, as you do chickens, then is the time to do it.

OLD TIME FAVORITES SUCH AS BALSAM, HOLLY-HOCKS, ETC.

MR. WILLIAM TOOLE.

Old times were the days of long ago when grand-parents of the present day were young, and before. We had beautiful flowers in those days, fifty or sixty years ago, and we loved them for their beauty and individuality.

Something was done in the way of carpet bedding and massing for color effect, but we loved variety in our gardens; and, the lawns not being so much in evidence in the foreground as since the introduction of the lawn-mower, we had our flowers in front of the house on each side of the walk, with an overflow supply in the vegetable garden and the back yard. When evening shadows gathered around us or when dew-drops sparkled in the morning sunlight, we had fragrance of flowers such as we seldom enjoy in these days.

We would not do without our lawns, and are ready to concede that it is not in good taste to cut them up with many flower beds, but there has been a time in later years when we missed the old time favorites, because there seemed to be no place for them.

The back yard is giving a home to our old time favorites, for which blessed be the names of those who are spreading the gospel of back yard improvment. Again as of old we may have warded to us on the evening breeze the fragrance of Mignonette, Sweet-rocket, Pinks, and Gilliflower. Again, if we wish, we may have a bouquet such as was given to your grandmother when she was a girl.

The beauty of bouquets in those days was often valued by the number of varieties of flowers grouped together, and it required good judgment and taste to arrange the various colors in harmony. Then as now there were some odd expressions of fashion and taste in floral arrangement. Well do I remember a lady visitor at our school when I was a boy in the city of Providence, Rhode Island, who carried a bouquet of Dahlias backed with a green flat surface of Arbor Vitae. At a later date the fashionable bouquet was round or pyramidal in form, with a surfacing of flowers as smooth as a football,—each flower having been stemmed with a bit of broom-straw and all sustained with a supporting of moss around a central handle. Now-a-days in fashionable arrangements bouquets and plants are often dressed out and overloaded with ribbons.

Yes we had beautiful flowers in those days,—the best the world had to offer, and if much has been added to this store we of the old days could not miss what we did not know of. To list and describe all the varieties which we then grew in our gardens would make a paper all too long, so I will only mention some of the common favorite kinds: Catchfly, Bouncing Bet, Bee Larkspur and other Delphiniums including the annual varieties, Bachelor's-buttons, Monkshood, Blackberry Lily, Sword Lily, Mourning-bride, Morning-glory, Sweet-rocket, Satin-flower, Sweet Mignonette, Sweet William, Love-lies-bleeding, Joseph's coat, Princess-feather, Cockscomb, Devil-in-a-bush or Love-in-a-mist, Four-o'clock, Youth and Old Age, Sun Dial, Venus' paint brush, Pot Marigold and other Marigolds, Balsam or Touch-me-not, Verbenas, Petunias, Hollyhocks, and many others.

Very interesting were the little Johnny-Jump-Ups, or None-so-pretty as they were called in my old New England home. We loved to study the faces which fancy discovered in the flowers. There were but few of the improved pansy within my knowledge sixty years ago, and they did not compare with the present day pansies in size and variety; but that time was only about thirty-

five years later than when the English growers first began to improve the *Viola tricolor*. There have been wonderful changes in others of our old time flowers, as: Youth and Old Age or Zinnia, Petunia, Dahlia, Sword Lily or Gladiolus, Geraniums, Hollyhocks, Sweet Peas, China Pinks and others.

Our program calls for methods of culture and mention of best varieties of some of the old time favorites such as Balsam, Hollyhock, Snapdragon, Verbena, and others.

Having the garden in which to grow our flowers, we must have the plants, which may be raised from seed or bought from the florist ready for planting-out. The best method of starting seeds depends upon various circumstances; the larger seeds like Four-o'clock, Balsam, Morning-glory, Helianthus, etc., may generally be safely planted in the open ground with ordinary weather. In early spring we usually have weather sufficiently moist to make it safe to sow seeds of Larkspur, Aster, Poppies, Pansies, the different Dianthus, and in fact any of the kinds which incline to come up with self-sowing, do best with early planting. Poppies do not transplant well and by all means should be planted early in spring or late in the fall where they are to stay, thinning out instead of transplanting. Some things like Cockscomb, the Amaranthus in variety, Portulaca, Balsam, and others are warm weather plants and do not thrive with early planting. Too often the weather is not as we wish, and choice flower seeds are expensive, so to insure success it is necessary to have a special seed bed in which to start and nurse the young plants until they are large enough to be transplanted to the garden. The soil of the seed bed should be rich, mellow, and free from weed seeds. Good drainage is necessary, and the bed should be enclosed with sides and ends to support cloth covered frames which are needed to keep the surface moist when the soil exposed to wind and sunshine would bake hard and prevent seeds coming up. We stir the soil of our seed beds with a pronged hoe, then rake smooth and tramp firmly. This process is repeated and then the surface is made very smooth and even, ready for the seeds. A thin coating of wood's earth is desirable as it keeps the surface mellow and less liable to pack hard.

As it is very important that fine seeds shall not be covered too deeply, the rule of covering to only twice the diameter of the seeds is a good one. The seeds should be sown in rows, of course, and a board is needed to stand on and to serve as a

straight edge. Varieties which germinate in about the same length of time should be sown near each other; because after plants come up they need airing and exposure to full sunshine, so if we must give extended shading to some kinds it is well to have them together. All of the cruciferae, like stocks, come up quickly after sowing, as do also Asters, most of the Dianthi, and many others.

Sometimes it is desirable to transplant into another nursery bed before putting the plants in the garden. It is very necessary to shift plants from the seed bed before they become drawn and slender. If too much crowded when young they never give as good satisfaction as when grown stout and bushy. The protection which plants receive in such a bed brings them along much faster than in the open ground, so it is important not to try to start tender things too early. If Poppies, Mignonette, and other things which are impatient of transplanting, are started in the open ground they may be assisted in a dry time by covering with paper. It is well to sow very small seeds, like those of Petunias and Portulacas, in small boxes, that special care may be given them if needed.

In the meantime the garden should be prepared for the plants, that the soil may be moist even though dusty on the surface.

Plants of a kind should be massed together rather than indiscriminately mixed. Some thought should be given to the relative height of plants when planning the garden. If there is no room elsewhere, make room for them in the kitchen garden.

Be generous in giving away the flowers and you will have more, as this will prevent seeding which checks the growth of the plants. Most flowering plants do best in a rich soil and all are better if the soil is kept cultivated around them.

Balsams have not been changed much by plant-breeders in many years. The two classes of rose and camelia flowered include a great variety of shades and markings. Where there is an abundance the stems may be cut for vases, and the flowers can be used in designs. They are easily grown between the time of spring and autumn frosts. The Snap-dragon, of late years, has been taken up as a florists flower and is now grown in the green-houses for winter blooming. For the garden we have the three classes, dwarf, half-dwarf, and tall, and many shades and combinations of red, yellow, purple, and white. For cut-flowers the tall are the most desirable. Although the seeds are small they

germinate readily and are easily transplanted. Very rich soil is not necessary for them, but they should have cultivation. They are quite hardy and may be started early, while if not permitted to bear seed they keep up a succession of blossoms until the hard frosts of autumn. Some times the plants live over winter. Verbenas are very desirable for masses of color and are useful in bedding or to border large beds of other plants. The seeds are slow to germinate, and it is desirable to have the plants started early to prolong the flowering season. The flowers drop too readily to be of use as cut flowers. Many of them are very pleasantly fragrant. There has not been much change in varieties of Verbenas for many years. Those with white centers are generally preferred. The so-called giant class is somewhat stronger in growth than the others. Verbenas are now more generally propagated from seeds than from cuttings.

Hollyhocks, like Sweet Williams, Sweet Rocket, and some other plants that are classified as perennials, do best if treated as biennials, sowing seeds each year for the next year's blooming. They are to be had in a great variety of shades in white, pink, crimson, salmon, dark purple, and almost black. They are divided into several different classes or strains. Of the smooth edged full double class, perhaps Chater's, an English strain, is as good as any. An American class, the Allegheny, has large fringed flowers and is a general favorite. A new class of Hollyhocks which bloom the first year from seeds, and can be treated as annuals, has been introduced by a German grower, but I have had no experience with them. The singles also make a fine showing. The Hollyhock is a showy, stately plant and appears to good advantage with a background such as a building, tall fence, vine draped trellis, shrubbery, or evergreens. The seeds need not be planted early,—June is soon enough,—as it is for most perennials and biennials. It is well to start them in a nursery bed and in September, plant where they are to stay. To winter over they must have good drainage, for if wetness surrounds them and ice covers them in winter and spring the crowns will decay. For protection the covering should be light, for if heavy, dampness holds and decay follows. This rule holds with all plants which do not shed their leaves, such as Sweet William, and other pinks, For-get-me-not, etc. Plants which lose all of their leaves and start from dormant buds near the roots; like Peonias, Phloxes, Delphiniums, Aquilegias, and the like, will bear such heavy cov-

ering as coarse manure. Sometimes we may have a Hollyhock of such rare shade or other desirable quality that the owner may desire to continue its growth. With careful nursing young plants may be started from side shoots, and if the stalks are cut down as soon as they have done flowering, and before ripening seeds, there is a good chance that old plants will winter over, but it is less trouble to raise young plants from seed.

DISCUSSION.

Mr. Tiplady: That paper is so descriptive that questions are hardly necessary.

The President: Mr. Toole has covered the ground thoroughly.

Mrs. Barnes: I would like to ask if there is a perennial Snapdragon?

Mr. Toole: The Snapdragon is naturally perennial. Of course, there are many things we grow as annuals; Snapdragon, Pansies and others, and, as I mentioned in that paper, the Snapdragon occasionally winters very well—not often, but perhaps four or five times in twenty years.

Mrs. Barnes: Then you would not classify it as a perennial?

Mr. Toole: No, we classify it as an annual.

Mrs. Howlett: I think Henderson and Vick both classify the Snapdragon as a perennial. I have kept it frequently without any protection; they will winter easily without any care.

CAMPANULAS, FOXGLOVES, AND OTHER BIENNIALS; CLASSIFICATION AND CULTURE.

HENRY W. ILLENBERGER, Del. Lake Geneva Gardener's & Foremen's Assn.

It is my pleasure to talk to you this morning on Campanulas, or (Canterbury Bells), Foxgloves, and other biennials.

Commencing with the Campanulas, or (Canterbury Bells) it may be said that there are only a few biennial varieties and that is Campanula, Calycanthena and its types being rose, blue,

striped, white in single and also the same types in double flowering varieties. These types which I have mentioned belong to the Bell flower family (Campanulaceae).

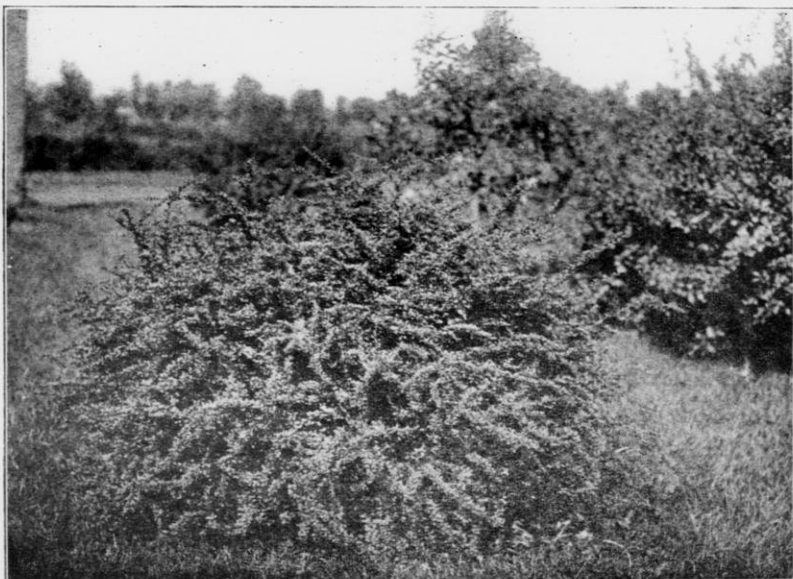
These mentioned varieties of the Campanula family should be sown during the first part of July, in a mixture of one-third clay, one-third leaf mould, and one-third sand. The planted seed should be kept covered for a few days with a wet bur-lap until it has germinated. It is then advisable to keep the young seedlings shaded on hot sunny days, until they develop two leaves. It is also advisable not to disturb the young plants 'till the middle of August, for by that time you should have beds for the biennials ready for renewing the same. It is the best time to transplant these young plants in the place where you intend to have them bloom.

The location for the campanula beds should be selected on the side partially protected from the north-east, with protection through the winter and early spring from moisture. As soon as the frost is about one-half inch in the ground, it will be necessary to cover the beds, if possible, with spruce branches, and leave them protected by these branches until the frost leaves the ground in the Spring. I would advise the gradual removal of the covering so as not to take the risk of a too sudden change for the plants. It is advisable, until they show new life in spring, to give them a good mixture of natural fertilizer. My experience with the Campanula variety has shown me, that by following this treatment, I have derived full satisfaction.

The next variety of the biennials, of which I am to speak, is *Digitalis Purpurea* or (Foxgloves) belonging to the Scrophulariaceae, or (Figwort) family, very commonly known as old fashioned plants. This variety is of European origin, but having sparingly escaped from cultivation, it may also be found in a wild state.

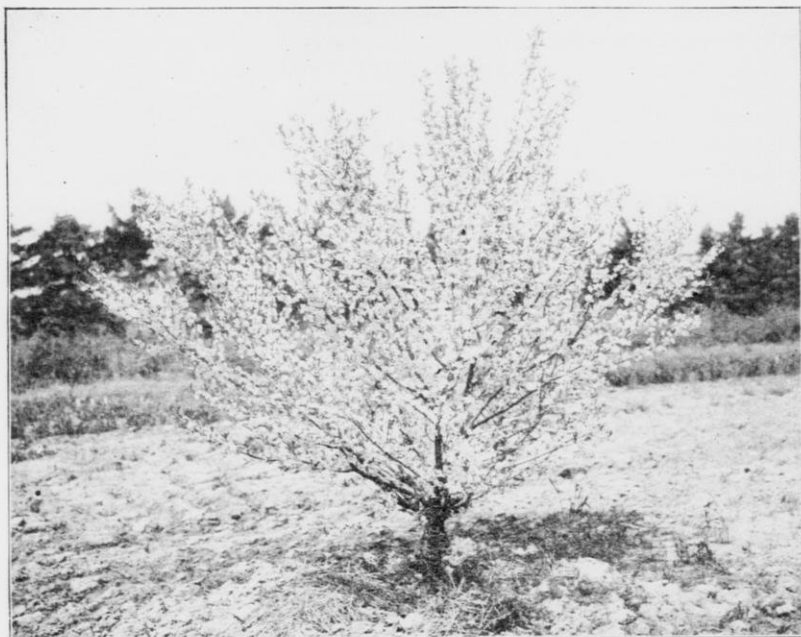
The culture of this variety may be said to be easier than the biennial previously discussed. Sown early in July, in sandy loam in open ground partly shaded, transplanting after six weeks to the selected ground for blooming. The location should be on an open hillside, with not too rich a soil. In this climate, foxgloves require a light winter protection consisting of a thin covering of slough hay or cat-tail reeds. It is very advisable to keep a protection against a heavy moisture. Therefore a hill-





Thunberg's barberry, *berberis Thunbergii*.

The brilliant autumn coloring and profuse fruiting of this species recommend it for planting, either singly or in masses. Low-growing, 3 to 4 ft., and graceful in outline.



Compass Cherry.

While it is doubtful if the Compass cherry will ever be extensively planted in Wisconsin for its fruit, its early blooming habit recommends it for ornamental planting.

side is the most desirable place for planting, to ward off too much moisture and snow.

This variety does not require any artificial fertilizer, for by supplying a fertilizer, the plant would naturally develop more into growth of foliage than of flower.

The Campanulas and Foxgloves are greatly admired by all flower-loving people and are worthy of a place in any garden as specimens of showy and attractive flowers which are fully developed in June and July.

Regarding other biennials, I will mention *Rudbeckia Triloba*, *Subtomentosa*, *Hirta*, *Brittonii* with especial attention to the *Rudbeckia Triloba*, which is not yet known as a very common variety of the Thistle family, (Compositae) under cultivation. I have cultivated this variety for cut flower purposes and I think there is nothing prettier than this miniature of the sunflower. This plant grows to a bushy height of four to five feet with about 800 to 1,000 fully developed blossoms at one time, through the month of August. The culture does not require very much attention, being sown during May in open, common garden soil and developing into strong, hardy plants 'til the following Spring, when they should be transplanted to their places of permanent growth. This plant is adaptable to any condition of the soil, whether wet or dry.

I have briefly discussed and have, I trust, produced a conception of the value of biennials to the horticulturist, not only from a practical point of view, but from a floral one also.

DISCUSSION.

Mrs. Howlett: Are there any varieties of the *Campanula* that are perennials?

Mr. Illenberger: Yes, I consider most *campanulas* are perennial, except one variety, the medium varieties, that are annual or biennial; all the rest are perennial.

Mrs. Barnes: I would like to have explained what an herbaceous perennial is, so that we will understand what is meant by that.

The President: The understanding I have of herbaceous perennials is that they die down to the ground in the winter and come up again in the spring.

Mr. Illenberger: From the same stem and same root; the old tops die and the roots send up a new growth.

The Secretary: Perennial Phlox is an herbaceous perennial.

Mrs. Barnes: But does the perennial Phlox die?

The Secretary: The top dies.

Mr. Illenberger: Young growth from the old plants; new crowns.

Mrs. Howlett: New crowns, but not new roots.

Mrs. Barnes: I would like to ask why the pansy is not an herbaceous perennial, if the roots live in the ground over winter.

Mr. Illenberger: They grow from the same stem. It never would die in case the climate would be suitable for it, they never would lose a leaf at all.

Mr. Toole: There are many plants that we grow annually, losing sight of the facts that they are perennial, for instance, the petunia. I suppose what brings this thought to mind now is the question of how to classify the exhibits. But those that are positively known and grown as annuals, we class them as annuals, even though technically they might be arranged otherwise.

Prof. Sandsten: I was going to remark on the question of definition, I am afraid if we get pinned down to a definition we will get stuck. I think we had better leave it alone.

Mr. Toole: I disagree with the Professor on that, because I remember once a member of our Society was reading a paper on perennials, etc. and he made use of the term "herbaceous shrubs." I called his attention to that and he was satisfied that he was correct. It was referred to Prof. Goff and he said there was no such thing as herbaceous shrub, a shrub is not herbaceous, and I think we can settle in our minds what is meant by herbaceous perennials. The roots and crown live through the winter but the tops die down, because they are herbaceous, like the annuals. There are many things that are hard to place, but there are very few on the border line, we do not need to ask about them. Anything that has a herbaceous top that dies down and the root lives, that is a herbaceous perennial.

Mr. Smith: Are not many of our common plants which

are perennials when we go a little farther south, annuals up here, simply from the fact that our winters are too severe? Like the castor bean, for instance; down in the Tropics it is, you might almost say, a tree, here it is an annual.

The Secretary: The tomato is perennial in some climates.

AFTERNOON SESSION.

SOWING SEEDS OF ANNUALS.

MR. ALBERT MEIER, Madison, Wis.

Under this term may be included all knowledge respecting the propagation of plants by means of seeds or spores. In general literature and common speech a seed is that part of a plant which is the outcome of flowering and which is used for propagating the species. In the technical or the botanical sense, however, the seed is the ripened ovule. The seed contains an embryo which is a miniature plant. The embryo has one or more leaves (cotyledons), a bud or growing point (plumule) and a short descending axis (caulicle). From the caulicle or stemlet the radical or root develops. This embryo is a miniature dormant plant. Each embryo is the result of a distinct process of fertilization in which the pollen of the same or another flower has taken part.

The ovule is contained in the ovary. The ovary is the seed case or pericarp. The pericarp with the parts that are amalgamated with it is known technically as the fruit. In many instances there is only one seed in the fruit and the seed and its case may adhere and form practically one body.

Germination is the unfolding and the growing of the dormant or embryo plant. The first visible stage in germination is the swelling of the seed. The seed case will burst by the pressure of a tiny white shoot from beneath. We say that the seeds have sprouted or have commenced to germinate, and have taken the

first visible step toward developing into a plantlet. At a suitable temperature the living cells of a certain part of the seed begin to increase in size and to divide, causing the tiny shoot to burst through the seed case. Germination is completed when the young plantlet is sufficiently developed to live without further aid from the seed.

CONDITIONS REQUISITE FOR GERMINATION.

In order that seed shall germinate they must be supplied with moisture and be given a definite temperature. The requisite temperature and moisture vary with the different kinds of seed.

The seeds may be planted in any medium which supplies the requisite conditions. Although seeds are ordinarily planted in soil such practice is not necessary to germination. However, the ground may supply the necessities for germination and it also supplies plant food for the young plantlet when it begins to shift for itself, and furthermore the plants are in the positions which they are desired to grow.

As a rule the sooner a seed germinates after it is planted the better for it is generally in danger of being destroyed by insects or fungi and the plantlet probably loses vigor by too slow development. Weeds may also be gaining a start if germination is delayed. We should, therefore, treat both the seed and the soil in a way that favors prompt germination.

Compacting the soil about the planted seeds hastens germination. When the soil is becoming drier day by day, as it often is in spring, compacting the soil about planted seeds materially hastens their germination and often secures germination that without the compacting might be indefinitely postponed. The hoe, the foot, a board or the hand may be used to compact the soil over planted seed.

Planting should be deferred until the soil becomes warm. Seeds cannot germinate promptly until the temperature of the soil in which they are planted approaches the optimum for their germination.

Excess of water in the soil retards germination by restricting the supply of oxygen and sometimes keeping the soil cold. Seeds should not be planted in soil wet enough to puddle about them, nor should the soil in which seeds are planted be so freely



A hedge of Rugosa roses.



A bed of peonies.



watered that the seeds remain surrounded with liquid water, thus shutting out the normal supply of oxygen.

Germination may be hastened by soaking seeds before planting. Soaking is most important with seeds having seed cases that do not readily transmit water at growing temperatures, such as the Canna. Germination may also be hastened by cracking or cutting away part of the seed case.

Seeds may fail to germinate from a variety of causes even when exposed to the proper degree of warmth, moisture and oxygen. They may be too old, they may not have been sufficiently matured when gathered, they may have been too dry or they may have been stored while damp and thus subject to undue heating, or may have been destroyed by insect or fungi, either before or after maturity. Defects of these kinds are not always visible.

DETAILS OF SOWING SEEDS OF ANNUALS BOTH IN-DOORS AND IN THE OPEN.

Seeds of annuals may be sown under glass or in doors from the first of March until the first of May, or even later. Sow in pans or trays two inches deep. Fill the pans or trays about even full of light soil which should be loam and leaf mold half and half, press down with a piece of board or block which will carry the soil one-half inch below the top of the tray, give the soil in the tray a good watering, sufficient to wet the soil through to the bottom. In half hour sow the seed. We wait to give the soil time to dry on the surface so that the seed can be lightly pressed into the soil with the board without sticking to it. After we press the seed down we sift on the covering of soil. The question is often asked—"How deep should seeds be covered?" As a rule the covering may be about the thickness of the seed; many seeds that are sown out doors are covered about six times their depth. With annuals in doors we sift the compost on until the seeds are out of sight and that is sufficient. Another pressing down of the covering and the least amount of watering will do as you now have only the thin covering to wet.

The thickness of the seed in pans or trays must be entirely a matter of judgment; it is poor economy to sow very thickly to save space; it is better to be on the safe side and sow thinly for if crowded at the start it is a poor beginning for the little plant.

Seeds when first sown should be kept at an even degree of moisture with no extremes. The trays should be kept in a shady place until the seedlings are above the ground when they should get the full light and not be allowed to draw up for want of light and ventilation. A temperature of 55 to 60 degrees brings the seeds nicely and keeps the young plants growing until time to transplant. There are quite a few Annuals that can be sown out doors or in the open, such as Candytuft, Mignonette, Zinnias, Marigolds, Nasturtiums, Verbenas, Phlox, etc. They should be sown as soon as possible after the ground is dry enough to work. The ground should be spaded and all lumps broken, well raked, the surface made fine and level, the seed sown thick in patches or drills, and the corner of the rake will make the drills half to one inch deep. Out doors the seeds are planted deeper than in doors in order to keep a uniform supply of moisture, a depth of three or four times the seed is necessary.

The finer and moister the soil the shallower the seeds may be planted. After covering the seed with soil press down the soil with a board or rake and cover with some boards to prevent the seeds from being washed away by heavy rains and also prevent the soil from drying until the seeds have sprouted. If the soil bakes as it sometimes does a little sprinkling of sand on top will be a great help to keep the soil loose.

For early flowers better results in germination are obtained when the seeds are sown in a specially prepared seed bed or frame. The conditions may be better, you are able to protect the young plants from cold and insects, and in transplanting you may select the strongest and best seedlings. The seed bed or frame should be in a sheltered place where it can be visited frequently and where water may be supplied when needed.

In handling seedlings in a seed bed or frame one must be careful that the seeds are not too thick and they do not suffer from lack of light or else the seedling will become spindly and weak.

DISCUSSION.

Mr. Smith: I would like to ask with what you cover the seeds?

Mr. Meier: Light soil; sand will do. Take a newspaper, or

piece of glass, anything. If you put glass on it you will have to put something over to shade it, for if you have the sun on it it will dry it out.

Mr. Smith: Does this description apply to seeds planted in the greenhouse?

Mr. Meier: Well, in the house, or greenhouse, same thing, or in frame seed beds, or frame outdoors. Of course, planting in the open, you must plant them deeper.

Mr. Smith: The object of covering, then, is to keep the moisture in?

Mr. Meier: Yes.

A Member: In sowing in boxes you want to have a little space between the top of the soil and top of the box, so that you can put it outdoors and still have room at the top to cover the box.

Mrs. Howlett: Would it be better to sow the seed broadcast, or in little drills in boxes?

Mr. Meier: It makes no difference which way you sow the seeds.

Mrs. Howlett: When you have them in drills you can keep the soil loosened with a fork or some other instrument, and I think they grow better with the soil kept loosened.

Mr. Meier: In trays we sow them broadcast; outdoors they are mostly sown in drills.

Mr. Smith: Where you are planting quite a number of different varieties, do you plant side by side, just as it happens, or do you plant certain varieties, one after the other?

Mr. Meier: We sow but one variety in a box, but it does not make any difference how many you sow, the seed will all come up; but large seeds ought to be planted together and finer seeds should be planted together, you can handle them better.

Mr. Smith: In flower seeds particularly, some kinds will come up in a few days, while other will take perhaps a couple of weeks. Now, if we follow the instructions of Mr. Meier and cover your seeds, say, you have planted marigolds, which come up in about four days under favorable conditions, while there are others with smaller seeds that will take two weeks, or if you have a lot of marigolds in between, some of them come up in two weeks, it is not the easiest thing in the world to keep the kind that are slow in coming up covered while the others are up and an inch high as they will be. Whereas, if you assort the

seeds, plant the quick germinating varieties side by side and then those that are slower germinating by themselves, we can cover or uncover as occasion requires, the various kinds, which will make it much more convenient.

Prof. Moore: We find most seeds do very well in a cigar box, the flat, narrow boxes. Wide shallow boxes should not be used, because they dry out too quickly. Take the cigar boxes and after sowing, tamp down, put a common newspaper over the top, and, having punched a few holes in it, then we water right on top, soaking it, and letting it go down through the hole until it fairly saturates the soil. In that way we have very little difficulty in respect to the seeds being washed out of the soil. With the ordinary sprinkling can you wash out a great many seeds, and we find the newspaper plan is a very convenient method of watering. If covered, as Mr. Meier suggests, with glass, so as to retain the moisture, it will not be necessary to water frequently.

Mrs. Howlett: I find a good way to water is to set the box or tray into a basin of water, so that the moisture soaks up from beneath.

RATIONAL ORCHARD MANAGEMENT.

PROF. E. P. SANDSTEN.

The planning and planting of a new orchard is only the first step in the successful production of fruit. The subsequent care of the orchard is more important though it is generally neglected not only by the farmer, but also by the average fruit grower. Most of us have gotten into the habit of considering our work done when the trees have been planted and then expect nature to produce the harvest. Few people realize that success in fruit growing as in any other agricultural pursuit requires constant care and study. Further we seem to have forgotten that fruit trees are as susceptible to culture and care as any crop that can be raised on the farm.

While no dogmatic rule or rules can be laid down for the proper management of a given orchard, there are nevertheless a few



A portion of the aster field at "Pansy Heights," Baraboo, the home of Fres. Toole.



"A typical modern low-headed apple tree—easy to cultivate, spray and pick the fruit."—E. P. S.

principles in orchard management that have universal applications. We will consider these principles under their appropriate heads.

Cultivation.—As a general rule all orchards should be cultivated whether in bearing or not. The cultivation should start early in the spring as soon as the ground is in a satisfactory condition for tilling, and continue until about the middle of July when a cover crop of some kind should be sown. It is preferable to plow the orchard early in the spring and plow it as deep as possible, but not so as to interfere with the roots of the trees. Considerable difficulty is encountered in old orchards that have not been previously cultivated, and care must be taken so as not to injure the roots by plowing. Following the plowing should come the disk harrowing. The object of disking the land is to get it in a perfect tilth. With the disk harrow one can get as near to the trees as advisable without injuring them. Following the disk harrow should come the light smoothing harrow. This tool should be used throughout the season, and there is no need for deep cultivation. The orchard should be dragged after each rain or at intervals of two weeks so as to keep the top soil loose and to kill weeds. Thorough cultivation will prevent the soil from drying out and will protect the orchards during the dry spells. It will also permit the air to penetrate deeply into the soil making the same more hospitable to the plant roots. Cultivation also materially aids and stimulates the wood growth which is essential to the trees. The importance of cultivation can hardly be over estimated in the production of fruits.

There are many orchards so located that clean cultivation is not advisable. Orchards situated on steep hillsides cannot be successfully kept in clean culture, and it is therefore necessary to put the orchard in sod in order to prevent the washing of the land. In such orchards, the mulch system should be practiced as nearly as possible. That is, sow down the orchard to clover or grass and cut the same and leave it under the trees. However, even in steep hillside orchards it is advisable to cultivate strips between the rows or to keep the orchard in cultivation for a year or two and afterwards seed it down. If the hillside orchard is plowed in strips, the plowing will soon terrace the hillside, and when this is accomplished, the orchard can be put under clean culture. It is sometimes necessary to put the orchard in sod if the tree growth is too rapid and rank in order to check this tendency, but it should

not be kept in sod any longer than is necessary, or until this defect is remedied. The great objection to sod orchard is that the root system becomes shallow; that the orchard suffers from drought and that the sod or mulch provides an excellent place for insects and diseases to hibernate in. Clean culture reduces the spraying operations in the orchard and insures better fruit.

Cover crops.—It is not advisable in this climate to leave the ground bare in the orchard during the winter. For this reason cover crops should be sown about the middle of July, so that the cover crop may cover the ground completely before the winter sets in. The cover crop abstracts considerable moisture from the soil and checks the wood growth, thus hastens the maturing of the wood in the fall. Further it protects the soil during the winter in holding the snow and prevents deep freezing of the soil. Again, the plowing under of the cover crop in the spring adds humus to the soil and puts it in better tilth.

The kind of cover crop to use depends on the character of the soil. On ordinary orchard soil that is reasonably fertile an oats cover crop is the best. Being an annual crop it will not survive the winter and start to grow in the spring, but it serves the purpose for which it was intended. If the land is poor in nitrogen some leguminous crop should be raised, preferably hairy vetch or clover. Hairy vetch being best adapted as it grows late in the fall and early in the spring and provides a heavy mat of green herbage which can be plowed under in the spring. It is difficult to get a reasonable stand and growth of clover in the fall and hence this crop is best adapted to orchards that are intended to be put down in grass or clover for a year or two. Crimson clover is not hardy in Wisconsin and cannot be recommended.

Pruning.—Pruning should be looked upon as an annual duty and of as much importance in the orchard management as cultivation. By pruning annually only small branches need to be removed, and the trees will suffer very little from the operation. Further if the pruning is done systematically, very little is required each year especially after the trees come into bearing when it is only necessary to cut out interlacing branches and water sprouts. This is especially true of cherries which should be pruned as little as possible, due to the fact that the wounds do not heal over rapidly and the wounds furnish starting points for wood-destroying fungi. If large branches are to be cut off they should be painted immediately after cutting so as to protect the

wound. The cutting of branches should be done as closely as possible to the stem or main branch. Stubs left on the trees are frequently the cause of black heart and decay.

Spraying.—While much has been said and written on this subject it is one that is more important than almost any other operation in the orchard. It is an insurance against the depredation of insects and fungus diseases, and no intelligent fruit grower can afford to neglect this work. The first spraying whether it be apples, cherries, or plum trees should be done in the spring before the buds are open, and at a time when they are swelling. For the first spraying 3 pounds copper sulfate to 50 gallons of water should be used. It is advisable to add 3 or 4 pounds of lime as an indicator so that the operator can see what portions of the trees have been sprayed. The second application should be given after the petals have fallen using the Bordeaux mixture, standard solution, to which should be added either one-fourth pound of Paris green or three pounds of arsenate of lead. The Paris green and arsenate of lead are used to kill the curculio and the worm of the codling moth. It is very important that these two insects be attended to at this time, especially that of the worm of the codling moth as it is the first brood and if it is permitted to live, the second brood will be large and do considerable damage. The third application should be given about 10 days later, using the Bordeaux mixture and the poison. The object of this application is to catch any of the remaining worms of the codling moths and the curculio. Ordinarily three sprayings are sufficient, though there are times when a fourth and even fifth should be given.

As has been said, the importance of these operations in an orchard can hardly be over estimated and no fruit grower or farmer for that matter can afford to neglect them. The time and money required for the work is relatively small when compared with the results obtained.

DISCUSSION.

Mr. Toole: I would like to ask in regard to spraying, whether it can be overdone. This year I have seen some apple trees on which the apples looked perhaps more rusty than we thought those varieties should show, and we were told that spraying was the cause of it, and yet I am a little doubtful, myself. I would like

to know more about that. Is spraying likely, if you keep it up, to do about as much harm as good, not in regard to the insect, but in regard to the fungous diseases?

Prof. Sandsten: I will say first, that I would rather eat an apple that is rusty than I would one that is wormy. Now, the fact of it is that spraying has received a black eye with many growers because of such results as Mr. Toole has spoken of. It may be due to the Bordeaux mixture and it may not be due to it. Now, there are conditions in the spring that favor russetting of apples when no Bordeaux has been used, but there are also cases where Bordeaux will produce a russetting effect. Now, if Bordeaux is properly made and applied, it should not russet the fruit, but the trouble is, as I said before, that three-fourths of our fruit growers do not know how, or they do not, at least, prepare the Bordeaux mixture properly. I think all of us know how to do it if we follow directions; we have the directions, but the trouble is, we do not take the pains to do it. That is where the trouble lies; we know better, but we do not do it right.

A Member: What do you call a low-headed tree?

Prof. Sandsten: Personally, I should like to see an apple tree as low to the ground as you can get it, that is to say, head it from a foot up to three feet; I should prefer a foot, right close to the ground. They are less apt to be affected by the wind. I know nurserymen do not like it.

The President: We do not like to have them down to a foot; that is pretty low.

Prof. Sandsten: I know, we cannot grow as many apple trees to the acre; they are harder to grow and they are worth more, and that was the point I was trying to bring out. Pay half a dollar anyway for each tree and get them low headed.

Mr. Smith: I would like to ask if the apple trees that are headed one to two feet from the ground are not more liable to have those sections or branches, if we may call them that, twisted off by heavy winds, than if headed out, say three feet, where the tree as a whole, gets a little spring from the trunk, and does not have to bear the full force of the wind in the section in connection with the crotch?

Prof. Sandsten: That sounds logical enough, but what do you do, Mr. Smith, when you are out in a storm; don't you lie down flat on your stomach and try to avoid it?

Mr. Smith: I never was out in such a storm.

Prof. Sandsten: Further, it is a question of pruning. If you prune a tree low while it is young you will get the branches tight to the trunk; if you do not, you will get a forked tree. It is a fact, the lower the tree is headed the more secure it is against the wind.

Mr. Birmingham: If you do not head cherry trees more than a foot from the ground, how are you going to cultivate them? You cannot get within eight feet of them.

Prof. Sandsten: O, yes, you can get as close as you want to with a disk harrow. A cherry tree does not go down very far; it also goes up in a vase-like shape, and you can cultivate a cherry tree if you head them a foot high, I am sure. You cannot get in there with a one-horse plow, but you can get under very easily with a disk harrow.

Mr. Henry: I wou'd like to ask in regard to the time of pruning. I find in our locality a good many of the people prune whenever they find they have a sharp saw and a little ambition, and I would like to know if there is any time that it ought to be done or ought not to be done.

Prof. Sandsten: Judging from the pruning that is done, I should say the ambition must be very periodic indeed, but the fact is that ordinary pruning—cutting off a branch—can be done at any time. Ordinarily the best fruit grower, the one that has a good, sharp pruning knife or shears, whenever he sees a branch that should be cut out, he cuts it out regardless of the season. Heavy pruning should be done while the tree is dormant; it affects the general life of the tree least at that time, but little twigs can be cut off at any time of the year.

Mr. Toole: Ought you not be more particular as to the time of the year?

Prof. Sandsten: I said, heavy pruning should be done while the tree is dormant; we prefer to do our pruning early in the spring.

Mr. Loewe: Prof. Sandsten refers to the curculio; is there any way in which you can spray to prevent the curculio?

Prof. Sandsten: Yes; they have to eat, like the rest of us, and you can poison them by using arsenate of lead at the rate of $2\frac{1}{2}$ to 3 pounds to 50 gallons of water, and about the time when they begin to get around, simply spray plum trees with that mixture and you will get them, as a rule, but I still stick to my proposition, that you will not have very many curculio if you

practice clean culture from the very fact that they hibernate in the ground, but you may have the trouble that many have, you may have a "buggy" neighbor, who does not take care of his own orchard and they get from his field into yours.

Mr. Kanute: I would like to know what causes cherry trees to die in some localities while in others they seem to be nice and green and fresh?

Prof. Sandsten: They die from many reasons. It is very difficult to answer that question, because the killing or dying may be due to a number of causes, that it is very difficult to say exactly why, even if a person were on the place, and it is doubly difficult to tell why a tree dies without knowing anything about the conditions. There may be simply a spot on a piece of ground where cherry trees die; we have cases in our own orchards where we cannot tell what the trouble is.

Mrs. Howlett: I would like to know what it is that injures the cherry trees where there is a perforation in the bark and a gum exudes from it and the branch dies from the point where the bark is perforated?

Prof. Sandsten: That is quite a common occurrence in many sections of the state, especially in a section where the moisture is atmospheric. You will have less trouble on the peninsula here than in the rest of the state, but we have that occurring in many sections of the state on higher land, when the ground is uniformly drier, the bark seems to shrivel up and from the crotches and trunk itself a gummy substance exudes.

Mrs. Howlett: It seems as if the bark were perforated by some insect.

Prof. Sandsten: Well, generally a woodpecker will pick those holes looking for the insects.

Mrs. Howlett: They are very small.

Prof. Sandsten: There is a bark disease that causes the first trouble and there may be insects getting into the bark afterwards.

Mr. Toole: If we have to pay from 10 to 15 cents a pound for arsenate of lead, ought we not to make our own preparation?

Prof. Sandsten: No, you can get arsenate of lead much cheaper; you can get it now for 11 cents a pound and it is just as cheap as Paris green, if not cheaper, and it is safer to use; it will not hurt the foliage.

Mr. Birmingham: On the younger apple trees I notice little green flies; will the Bordeaux mixture protect against those?

Prof. Sandsten: No; Bordeaux mixture is for fungous diseases; it is not an insecticide. You should use kerosene emulsion or tobacco juice. They are what are called apple aphids.

DOES SPRAYING PAY?

MR. J. G. BUEHLER, Twin Bluffs, Wis.

From my own experience of ten years I would say that spraying pays but that it only pays when it is done thoroughly, with proper material and at the right time, for fungus diseases and insects that you wish to subdue. From a scientific or chemical standpoint I can give you nothing new in spraying formulas, only what is recommended in horticultural literature. Every one who provides for a family and has the opportunity to grow fruit for family or commercial uses should have some knowledge of combating insects and diseases as these are always present in a greater or less degree from one end of the continent to the other, especially in the older fruit growing localities. It is a well known fact that spraying does pay, and while the results are not always immediately in evidence, we often reap the benefit in later crops. It often means the difference between a good crop and no crop or at least inferior fruit. Right here I can speak from a personal experience, as a year ago I bought the fruit from three orchards; the first orchard I sprayed once as soon as the petals had fallen but that was the only spraying the orchard received and I did it at my own expense. From this orchard I gathered nearly 80% of No. 1 fruit, 10% of No. 2 and only about 10% that was not marketable. I felt well repaid for my expense in spraying and there is a fair crop in that orchard again this year.

In the case of the second orchard I bought, the owner thought he could not afford to spray with Bordeaux but would spray with Paris green alone and wanted to hire me to do the spraying for him but as I could not find time and did not care to spray with Paris green alone, the orchard was not sprayed at all. The result was about 80% of scabby apples that hardly passed for No. 2 grade and 20% not marketable and no fruit

this year. Had he sprayed with Bordeaux and Paris green it would have paid him 500% on the investment and he might have had apples again this year. This orchard is one-half mile from the first named.

The third orchard was well sprayed as the owner was careful in his work and followed advice closely. The orchard is just coming into good bearing, most of the trees nine years old. I contracted for the crop early in the season at \$1.00 per barrel for McMahan and Wealthy and \$1.25 for Northwestern Greening on the tree. I sold the entire crop for \$3.50 per barrel, doing the picking, packing and hauling myself. This orchard yielded about 98% of marketable apples and many who saw the orchard before I commenced harvesting the crop, said it was the finest crop they had ever seen.

I consider that there are three essential points in fruit growing; first is pruning, the second spraying and the third cultivation and fertilization and each without the others is incomplete. To spray without pruning would be a waste of material on dead branches and superfluous wood. This extra wood also hinders the development of the fruit by shutting out the sun-light and air, which are essential; also rendering the trees more liable to insect and fungus attacks, for when once fungus gets a strong foot-hold in an orchard it will get into the older wood and also affect the fruit spurs for the following crop and this point accounts largely for crop failures.

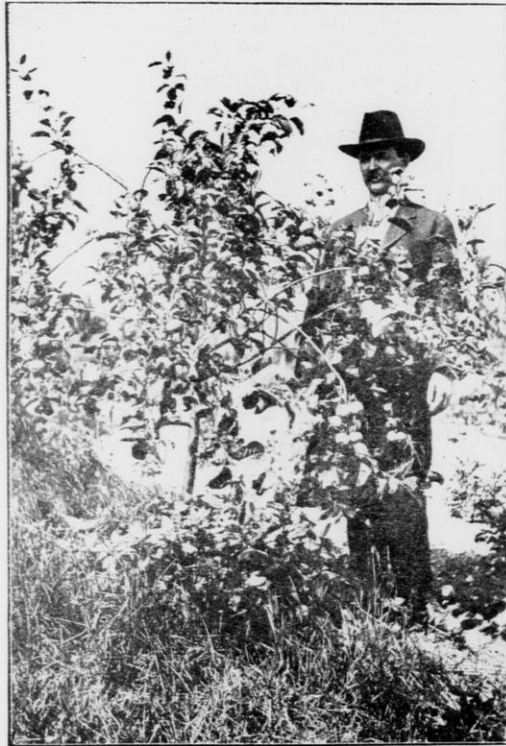
Spraying must be considered a very important feature of fruit growing but it must be thoroughly and immediately done for a number of years. Its universal practice will tend to revolutionize fruit growing and as an element of success cannot be over-estimated.

I feel like criticizing some of the statements made that Wisconsin is not a fruit state. Like every other state in the Union it has favorable and unfavorable localities but I believe the time is near when Wisconsin will be recognized as a fruit state. Last year considerable money was lost by the apple dealers but not on Wisconsin apples because these were too good.





Blackberries at Bayfield, Wis.



Duchess apple tree 4 years after planting, Bayfield, Wis.

DISCUSSION.

The President: This brings up the question of spraying again and questions may be asked Mr. Buehler upon the subject of spraying.

Mr. Bingham: I would like to ask how many applications he would advise?

Mr. Buehler: Three applications; the first to be made before the blossoms came out, or just as soon as the fruit buds show; then again just as soon as the petals have fallen, and ten days later another application.

A Member: Will spraying kill the bark louse?

Mr. Buehler: No, not with the Bordeaux, the Bordeaux does not kill the bark louse; you must use the kerosene emulsion for that, and watch your time. There is only a certain time that you can kill them, and that is along about the middle of June I think, the middle or latter part of June.

Mr. Hatch: I would like to ask Prof. Sandsten what to do for the bark louse; whether you could use lime, sulphur and salt?

Prof. Sandsten: The bark louse can be killed in the winter by using the lime, salt and sulphur wash.

Mr. Hatch: Have you ever done it?

Prof. Sandsten: I have not done it, but some people have done it in our orchard.

Mr. Hatch: Is salt essential to the mixture?

Prof. Sandsten: No, not necessarily; you can eliminate the salt.

A Member: I would like to ask Mr. Bingham what they do in Michigan?

Mr. Bingham: Use sulphur and lime, do not need to use the salt.

Mr. Bingham: What would be the result of an application of pure kerosene?

Prof. Sandsten: If you spray with kerosene you may not have any bark lice and also you may not have any trees. Ordinarily kerosene is very injurious to trees; but if you can get what you call crude petroleum, that is, the natural oil, without being clarified, having a certain specific gravity, you can kill

the bark louse with crude petroleum. You will kill the louse with kerosene, but you will also kill the tree.

Mr. Bingham: We used that on our orchard; we did not notice any bad effect except on the Japanese plum, and we killed a great many lice.

Prof. Sandsten: Oh, you will kill the lice all right. I have no doubt it can be done, but I do not advise it.

The President: They are not all as careful as Mr. Bingham.

Mr. Bingham: We had trees of some sort that did not do very well; bark lice were very thick, crusted the bark all over; we gave them a good application. Of course I would not recommend it to a man unless he is very careful in using it.

Prof. Sandsten: It is better not to recommend it at all.

The President: We are very glad to have this experience of Mr. Bingham, but, as Prof. Sandsten says, we want to be very careful about it.

A Member: How is lime and sulphur applied, by a spray pump?

Mr. Buehler: Yes, it can be applied with a spray pump.

COVER CROPS—THEIR USE IN ORCHARD MANAGEMENT.

J. G. MOORE, Asst. Prof. of Horticulture, Univ. of Wis.

A discussion of the subject of cover crops presupposes that clean culture is followed as opposed to either the sod, or grass mulch system in handling the orchard. We will not attempt to discuss here the relative merits of these, but merely consider the part played by the cover crop in the clean culture system. Almost every Experiment Station in the country has done more or less work in an endeavor to determine the proper methods of handling the cover crop, and the various results which are brought about by its use. The different phases studied by these experimenters extend from the ameliorating effects upon the soil to the likes and dislikes of various orchard crops for the cereal used in producing the cover.

It has been found that clean culture practiced throughout the entire growing period, does not result in the best conditions for the production of fruit, and for that reason, the cover crop has been employed to counteract unfavorable conditions.

In the use of cover crops there are always one or more chief reasons why the crop is employed; these we may term "objects" for their use. Ordinarily they may be classified under the following heads:

To hasten the ripening of late wood growth, and, in a measure, prevent top-killing.

To prevent deep freezing of the ground, and thus avoid root-killing of the trees.

To prevent washing of the soil by heavy fall and spring rains.

To lessen evaporation in winter when there is no snow on the ground.

To hold soluble plant food in the soil, and to increase the amount already there.

To add vegetable matter to the soil so as to increase its water-holding capacity, and give it better tilth.

While all of these "objects" are of more or less importance each year, some one or two stand out more strongly than the rest.

These will vary from year to year, and in various localities, which makes it impossible to give any hard and fast rule concerning the practices to be followed with cover crops. It therefore becomes necessary for each fruit grower to study his own conditions, and having acquainted himself with the results which may be expected in following out a certain procedure, he must employ those methods which, in his judgment, will be most likely to give the desired result.

The ripening of wood and the prevention of late summer growth as a means of preventing winter top-killing is one of the most important phases of orchard cultivation with which the Wisconsin fruit grower has to deal. If we were to continue the cultivation of our orchards throughout the entire growing season, there would be a tendency for the trees to produce a late growth which would not ripen before the advent of killing frosts. The result would be that a large proportion of this growth would be killed back which is not at all desirable in the growing of well-formed fruit trees. A cover crop first acts as an absorbent of moisture, reduces the moisture content of

the soil, checks the growth of the tree, and hastens the ripening of the wood, thus enabling the trees to go into winter quarters in much better condition than it would otherwise.

The prevention of deep freezing of the ground to avoid root-killing is also very important in this state. The dying of trees soon after growth starts in the spring may very often be attributed to root-killing. If our orchards are to be left barren of any vegetation during the winter months, there will be nothing to hold the snow upon the surface. The strong winds will drive all that falls there into drifts along the fences, and the soil will be subjected to deep freezing. On the other hand, if a good cover crop be grown, a large proportion of the snow which falls will be held upon the ground, thus furnishing a blanket, which in conjunction with that afforded by the cover crop itself, will, in most cases at least, reduce the depth of freezing one half, and in some cases, even a much greater reduction has been experienced.

Used as a blanket, the cover crop also exerts other influences, which indirectly affects winter-killing. It reduces to a large extent the evaporation of moisture from the soil during the winter months, especially when we have little or no snowfall. It is a well known fact that a great deal of winter-killing of trees in dry climates which have low temperatures during the winter, is due not so much to the low degree of temperature alone, as to the drying out process which is occasioned by the strong dry winds. Experimentation has proved that there is always more or less sap-movement in the trees during the winter. If the ground be so dry that the roots are unable to supply the tops with sufficient moisture to prevent the cambium being dried out, there will be noticed the next spring a large amount of killing back which was primarily due to the dried-out condition. When the cambium has become thoroughly dried it is impossible for it to resume growth in the spring, and as a result we have dead twigs, which are not only useless to the tree, but also prove a menace in trying to preserve the equilibrium between the food-gathering and leaf-bearing areas. Such a condition makes the problem of pruning much more difficult. As previously stated, the cover crop is a large factor in preventing this condition and no orchard should be allowed to pass the winter without some form of vegetation on the ground.



Oats as a cover crop in a plum orchard.



A cover crop of oats in a plum orchard. Photographed in November.



Cover crops exert a great influence upon the supply of plant food in the soil, its retention and the addition of vegetable matter. I think we are safe in saying, however, that the addition of vegetable matter is probably of greater importance than the retention of plant food. Productive soils must contain a large amount of vegetable matter. Orcharding is a system of cropping which does not naturally return much vegetable matter to the soil. If clean culture, without the cover crop, is practiced, we soon find that the soil is depleted of vegetable matter and unless a large amount of barnyard manure be applied, the productiveness of the orchard soon reaches a very low percentage of what it should be under ordinary conditions. Taking into consideration the other benefits derived from the use of a cover crop, the addition of vegetable matter by this method is probably the cheapest which can be employed.

We have already spoken of the use of the cover crop as a food supplier. Personally, I would place this under the secondary benefits of the cover crop rather than among its more important phases. There is no question but that the cover crop may be made to supply a very large amount of plant food. In its use for this purpose, however, a great deal of precaution must be exercised or the evil effects will outweigh the benefits. The plant food most largely supplied by cover crops is nitrogen, and while nitrogen is an essential plant food and very necessary to a vigorous, healthy growth, an over supply in the soil is a drawback to fruit production. Nitrogen favors a large vegetative growth. The activity of the tree cannot be turned strongly in two directions at the same time, and if the supply of nitrogen is sufficient to cause the tendency of the tree towards a large wood growth, then we can expect that the production of fruit will be materially reduced. Then too, an over supply of nitrogen would have a tendency to induce late summer growth which would be very apt to suffer during the winter. It is not wise to grow nitrogen-gathering crops as covers continually. Such a procedure would, on ordinary soils, soon give an over supply of nitrogen in the soil, and result in the conditions given above. While cover crops do increase the amount of plant food in the soil they should never be considered as fully supplying the needs of the orchard, or because they are used the application of barnyard manures and other fertilizers be abandoned.

In Wisconsin where lands are more or less hilly or at least rolling, a great deal of difficulty is experienced in preventing washing by heavy fall and spring rains. In fact, even in summer, how to prevent the washing of soil and the gullyng out between trees, becomes a very serious question in clean culture orchards in which the site has considerable slope. Considering the washing which takes place during the summer, it is all the more necessary to guard against the same condition during the winter and early spring. The use of cover crops therefore, becomes practically essential on such lands if clean culture is to be practiced during the summer.

HANDLING OF COVER CROPS.

One of the questions most often asked concerning cover crops is "When should the crop be sown?" As with all other phases of orcharding, this depends upon conditions and not infrequently upon conditions which are largely conjecture. The one factor which will most largely influence the time when a cover crop should be sown for any particular kind of fruit is the proper amount of soil moisture during the late summer and fall months. One of the chief reasons for sowing the cover crop is the regulation of soil moisture during the latter part of the summer in an attempt to control the wood growth of the season. If the season be especially moist, and the indications are that it will so continue then the cover crop needs to be sown early so that the increased growth which the cover makes will draw upon the surplus moisture of the soil, and give the desired result as to wood-ripening. On the other hand, if the season has been particularly dry and the trees have practically ceased to grow, the cover crop need not be sown early, the chief concern being to have it on the ground in sufficient time to prevent any post-season growth caused by late summer or early fall rains. In a wet season, the tenth of July is none too early to sow the cover crop. Where there has been a long drought, as during the present summer, cultivation may continue as late as the middle of August, but as soon as sufficient rain has fallen to induce growth, the cover crop should be started. In ordinary seasons July 15th to August 1st, makes the best time for the cessation of orchard cultivation.

CROPS.

There is almost an endless amount of discussion as to the crops best suited for a cover for the orchard. It is almost impossible to get any two orchardists to agree upon this subject, and it is safe to say that no one crop is best under all conditions. Every crop has its particular advantages which may be those of season, amount of growth produced, resistance to frost, and other factors. For convenience, we divide the crops used as a cover into two chief classes, based upon whether or not they add any considerable quantity of food. We term leguminous crops, food-suppliers, and the others, non-leguminous or non-food-supplying. These classes are again divided according to ability to survive through the winter, and are called respectively hardy and tender crops. In the food-supplying hardy group, we have hairy vetch and crimson clover, the latter of which can only be considered as half hardy in Wisconsin. Of the tender food-suppliers, we have field peas, cow peas and soy beans. Of the hardy non-food-supplying class, the most important is rye, but wheat is occasionally used. The increased cost of the seed, and the fact that the character of the growth is much the same as rye, makes the latter more in favor. Of the non-food-supplying tender crops, oats, millet, turnips and rutabagas are the most used. The two latter might be placed in a class by themselves, due to the fact that they have tender tops which kill back with the frost, but roots which live over, and produce growth the following season. It is not necessary that each crop be grown alone, frequently two or more are grown in combination. Probably the most used combination is that of oats and Canada field peas.

Some of the chief advantages and disadvantages of the various plants mentioned above, in their use as cover crops are:

Hairy vetch, especially hardy; makes a rapid growth in spring; is slow to catch in a dry season; makes slow growth in fall; is low and does not hold snow as well as some of the other crops.

Crimson clover, can only be recommended in certain localities owing to the fact that it winter kills; where hardy, makes a very good cover if a catch can be secured.

Field peas, one of the best food-supplying crops; makes a

heavy growth; is especially valuable when mixed with some other crop which provides support.

Cow peas and soy beans. There is relatively little difference between these two crops; both are more tender than field peas, but stand up somewhat better after frost.

Rye, the best non-food-supplying hardy cover; does not make as much growth as oats in the fall, but stands up somewhat better during the winter.

Oats, probably the most used of all covers; comes quickly when sown; makes a good growth; stands up fairly well during the winter.

Millet, similar to oats, but less hardy and does not stand up as well.

Turnips and rutabagas add a considerable amount of humus but lack the essential qualities necessary for holding snow; especially valuable on account of the phosphoric acid they add.

AMOUNT OF SEED.

The amount of seed to be sown for the various crops is practically the same as that in ordinary field culture. We prefer to err on the side of having the cover too thick rather than too thin. There is little danger on the side of the former, save in the expense of seed, as the more dense the growth, the better it stands up, and therefore the better it holds snow.

The following amounts may be considered as indicating the quantity of seed to be used per acre:

Hairy vetch, 1 bushel; crimson clover, 10 pounds; field peas, 2 bushels; cow peas, 4 to 5 pecks; soy beans, 3 to 4 pecks; rye, 1 to 1½ bushels; oats, 1½ to 2½ bushels; millet, 6 pecks; turnips and rutabagas, 4 pounds.

It is well to harrow the ground just before sowing, and to put in the crop exactly the same as for the field conditions. Once in the ground, the crop needs no further attention until time for cultivation the next spring, when it is to be plowed under and the system of clean culture again taken up.

The benefits derived from the use of a cover crop will depend very largely upon the good judgment exercised by the orchardist, and while mistakes may be made owing to inability to tell just what the future conditions will be, the cover crop will in the

long run vindicate itself as a companion to clean culture in a rational system of orchard management. Occasionally an orchardist stops cultivating at the proper time, and allows Nature to provide him with a cover crop in the form of weeds. It would hardly seem necessary to advance any argument against such a procedure. The growing of weeds as a cover crop simply means that the labor expended in eradicating them will in time, more than offset the cost of using a legitimate cover. Some may say that the season of growth will be too short for the weeds to ripen seed. If this be true, it will only be a short time until those weeds which produce the cover are those which have a short season and ripen their seeds early, for unless this be so, the weed cover crop, must in a short time lose its source of seeding, and become a thing of the past. At the very best, a cover crop of weeds is an uncertain thing, and one which we believe should not be practiced by anyone who wishes to keep his orchard in the best condition at a minimum expenditure of time and money.

The President: Are there any questions you would like to ask Prof. Moore?

Mr. Toole: I would like to ask to what extent the danger from mice is enhanced by the use of a cover crop? I remember a number of years ago Mr. Barnes used oats and barley and the next year, speaking of his experience, he said that the straw had harbored mice and the mice girdled the trees. He attributed this injury to the cover crop.

Prof. Moore: The fact is, in most cases we expect very little trouble from mice on a field orchard that has had clean culture; might be a little on the edges, but that is very readily overcome by the fact that the mice work under the cover of the snow and all you have to do is to turn the snow slightly away under the tree.

Mrs. Howlett: I understood Prof. Sandsten to say that they would not use oats as a cover crop, and this gentleman, I understand recommends oats as a cover crop.

Mr. Moore: I hardly think Prof. Sandsten made that statement.

Mr. Bingham: I would like to ask Mr. Moore what we are going to do with the period between the time that he recom-

mends cultivating should cease, and the time to sow oats. We would not want to sow oats at that period; what are you going to do with that ground up to the time you sow oats; it will furnish you a cover crop of weeds before it is time to sow oats.

Prof. Moore: The question of sowing cover crop is quite a little different from the one I treated in the discussion; the difference lies in the fact that we stop cultivating much earlier. If I stopped cultivating at that time, I would sow oats; I do not know what your objections may be to sowing oats, or the cover crop, not necessarily oats. I see no particular disadvantage in sowing at that time.

Mr. Bingham: Does the wheat that we are growing in the orchard furnish as much humus as oats?

Prof. Moore: I would say that depends entirely on how good a stand of wheat you have. I would say, that what I saw in your orchard this morning would furnish as much humus as oats. This year we sowed our oats crop very late, about the middle of August; we got oats about $1\frac{1}{2}$ to 2 feet high, sometimes higher than that, depending on conditions. Of course, that is not close to the trees, but out away from the trees, and those oats stand up along pretty well into the winter. They kill back some, but they stand the frost much better than you would expect; in fact, I have been very much surprised at the way they stood up.

Mr. Bingham: In orchards say where cherries had been carefully planted twelve to fourteen years ago and twenty feet apart, what would your method be of handling an orchard like that, I mean as to cover crop?

Prof. Moore: I would try to get what cover I could, simply for the addition of the humus. You understand you cannot get a cover crop in an orchard where the limbs of the trees come close together, you cannot get it to grow under the trees, but you can get a little growth, and in that case I would use those crops which seem to make the best growth in the shade.

Mr. Bingham: Would you recommend something in the line of turnips in an orchard of that size, from the fact that they would be better to get into the ground next spring? Or, in other words, how would you recommend getting in a heavy crop of oats, what tools would you use in working them in?

Prof. Moore: I would use the disk harrow. I think you would find, by the time it is ready for spring cultivation, that with a disk harrow you can work the oats in pretty well.

Mr. Bingham: You would have considerable difficulty in ridging the orchard.

Prof. Moore: Not necessarily; with the disk, of course, you have to work the orchard in two directions, and in that way keep from ridging it. I have seen a disk harrow this summer in an orchard which had been neglected, with a crop of weeds up to here (indicating); I saw the man who has charge of that, one of our students; he has a disk harrow in there and he is working those weeds into the soil; mowed them off first, put the disk harrow on them and is working them into the soil, and that orchard was at first so rough that he could hardly go through with the spraying machine without breaking down, yet he is working those weeds in and he is getting that orchard into shape.

Mr. Bingham: What kind of disk harrow would you use, the cut-away, or the other kind?

Prof. Moore: The cut-away harrow seems to be better for the work which I mentioned. He had a cut-away harrow.

Mr. Bingham: Does it not cut off some roots?

Prof. Moore: No, not if you have given your orchard proper cultivation from the start. Of course, if you have not cultivated it, and left the roots at the surface, you would cut off the roots, just as if you would cultivate your corn later in the season, you would injure the roots.

Mr. Toole: I would like to ask in what way rutabagas would add phosphorus to the soil?

Prof. Moore: I did not mean to add phosphorus. You understand the plant foods are in two conditions, either available or not available. There is a great deal of phosphorus in the soil which the fruit tree cannot use directly, but when that is taken up by the turnip or rutabaga and stored in the roots, when it is taken up and transferred, then you plow that down into the soil, work it into the soil, then your phosphorus is in the condition that the trees use it.

Mr. Richardson: Did you ever put a cover crop on strawberries?

Prof. Moore: No, we put a mulch on strawberries late in the season, but not a cover crop. We like to cultivate the strawberries and keep them growing quite late in the season.

Mr. Richardson: Are there not certain seasons when a cover crop would be helpful, when it is very wet in the fall and has been dry in the summer, when you get a late fall strawberry

growth that you are afraid they will not go through the winter?

Prof. Moore: In that case, for instance this season, you put on a cover crop at present for checking the growth; at the same time the great trouble of putting it on at this time of the year is that you will be unable to get it under in the spring, unless you get a mulch and bury it.

Mr. Richardson: Suppose you put on a cover crop.

Prof Moore: Take for instance sugar beets, sow them along about this season and then put on your mulch and then work them under next season, is that what you mean?

Mr. Richardson: Would you work them down in the spring?

Prof. Moore: No, work them in after your crop is harvested; that would add available nitrogen. That would have a tendency to give you a good growth. Only it might do this; it might force your plants into growth so early that it would lessen the crop next year. Not lessen it in the way of setting fruits, but from the fact that a great many strawberry plants throw out runners at the time of fruiting if they have lots of nitrogen; the tendency would be to throw them into vegetative growth and make the berry smaller. There would be the difficulty.

BEST VARIETIES OF APPLES FOR COMMERCIAL ORCHARDS.

The President: I see the speakers are to be selected by the presiding officer. I will call on Mr. Hatch to give us a list of the best varieties for commercial orcharding.

Mr. Hatch: I could not do it. I have talked a great deal of orcharding all my life, and now I will say I do not know what I would plant; it just depends on circumstances. There are a great many things I can make money out of; I do not know that there are any three that I prefer to plant in preference to any other three, it would depend on what I wanted to accomplish when I planted, for what kind of a market. I refuse to name three varieties for anybody, because they might suit them and might not.

The President: It is not confined to three.

Mr. Hatch: If a man likes the Snow apple, he can take it and

make money out of it, if he knows how to treat it. He can take the McMahan, Lubsk Queen, or it might be half a dozen other varieties, it depends on the man. Nine-tenths of any orchard is the man, and the other tenth is what he has to do with. Every man is a problem to himself, individually, and the whole situation. I do not like to say anything further in regard to that matter.

Mr. Riegel: May I ask Mr. Hatch what he has planted?

Mr. Hatch: I have very little orchard here myself; I have only about two hundred trees; I do not care for the orchard, Mr. Bingham attends to that, he is a younger man. When I came here I did not care to go into the fruit business; he can tell you more about it, because he is doing these things. I have planted a number of varieties; I might or might not plant them again, according to circumstances.

The President: Mr. Bingham.

Mr. Bingham: I think a great deal as Mr. Hatch does, it is a hard matter to name varieties for any one to make money out of, it all depends on what purpose he has got. If he handles it right, there are a number of varieties that do very well. I will say, in my own orchard we are growing largely Northwestern Greening, McMahan, Wealthy and Snow. We have others, but those are our principal crop, and by handling them right we get good apples every year, and we use the system of cultivating the entire season, that is, up to the first of July, and those four varieties are good for me, knowing how to handle them and being familiar with them for a number of years.

Mr. Buehler: I think it depends a great deal on the locality in which you live. For instance, I would not recommend a person to grow the same apples that grow down in Illinois, or the northern part of the state, perhaps, where they would not do as well as with me, and perhaps the market conditions would have something to do with it. I think it is best for each one to choose the commercial apples that are paying best wherever he lives.

Mr. Riegel: Mr. Buehler is not definite enough. We know where he lives, but what varieties does he plant?

Mr. Buehler: McMahan, Wealthy and Snow are my best paying varieties.

Mr. Hilderman: I would like to ask if any one knows anything about the Peerless apple?

The Secretary: We have the Peerless apple in the Wausau trial orchard; twelve trees have been planted for eleven years;

they fruited for the first time last fall, gave us a good crop of fruit, the trees were quite well loaded with fairly good apples; no fruit this year. It is an apple of about the season of the Wealthy, not as good in quality, not as good in appearance, and judging from the Peerless trees in the Wausau orchard, I can see no place for it in our orchards. It is not as good as the Wealthy.

Mr. Bingham: I think the fact that the trees in the Wausau orchard have borne but one crop in twelve years should condemn the variety right away. I think a variety that does not produce more fruit than that should not be planted in a commercial orchard.

Mr. Hilderman: How is the Milwaukee?

The President: The Milwaukee has a little local reputation, that is all. It never has been propagated very much; never has been found worthy.

Mr. Hatch: It is a Duchess seedling.

The President: Yes, and it is not hardy outside of its own neighborhood.

Mr. Toole: In Sauk county a great many apples have been raised and shipped and money made by raising and selling them, and there are several varieties that pay well there. The Duchess perhaps brought more money and paid better because it has been yielding good crops for a great length of time. I think at present we would set the Wealthy ahead of any other variety, but I notice the Duchess pay and continue to pay. And following them, the Northwestern Greening is promising, although it is somewhat uncertain, I do not know whether it will always continue in favor, but the Northwestern Greening has been paying and promises to for some time, and the Newell has paid well with us, and Plumb's Cider has paid well, and there are some people who think Patten's Greening will be standard on the list of paying varieties, although we may quarrel with the quality. One of the Palmer Brothers said he has made a great deal of money in the past from the Golden Russett, but still, we do not generally plant it much although it has made money. I think that list can be extended with us for paying varieties.

Mr. Buehler: I think in planting commercial orchards we should plant large, red apples. A white apple never takes the market as the red apple does. I would not plant Talman's Sweet or Patten's Greening.

Mr. Toole: I have heard different people say that the McMahan was a poor apple, yet people will buy it on sight.

The President: That is not a red apple, either. I told him he would have a fight on his hands.

The Secretary: I want to ask the fruit men of the state if it is not a fact that we should plant exclusively fall apples in our commercial orchards, exclusively summer and fall apples? It so appears to me from my limited observation. In the first place, we have few, if any, good winter apples. I think the best one we can set up is the Northwestern Greening, and the East or South can grow a dozen or fifteen that are as good, if not better than the Northwestern Greening. But there is no section in the United States that I know of that can produce fall apples of the quality of the Wealthy and the McMahan and others of that class, the Snow apple, and do it as well as we can do it in Wisconsin. It has seemed to me for years that the opportunity for the orchardist in Wisconsin is to grow summer and fall apples. The eastern and southern regions are not growing these and will not grow them when they can grow Baldwins and Ben Davis, perhaps, and other late keeping apples. There is no tendency on the part of the orchardists in the large orchard sections of the United States to plant the fall apples, and it appears to me that it is our golden opportunity to raise apples that can be marketed in October and November; get our beautiful Wealthy apples on to the market before the wormy Baldwins come from Michigan and before the winter pack comes from the eastern states. Just at that time the markets are bare in Chicago, and the northwest, in Minneapolis and Omaha, and we have the demand and we have the men, why not plant the Wealthy apple? Why not plant the McMahan, why not plant the Fameuse and others of that class, and why not plant liberally of Duchess? Just the moment when somebody will come forward and give us cheap and rational storage for the Duchess, by which we can hold it three weeks or a month after picking, then we will add the Duchess to that list, and even now as it is, without storage, there is just as much, if not more money made out of the Duchess apple grown in Wisconsin than any other apple that we grow, acre for acre. I shall continue to say until I am well convinced to the contrary, that I believe the opening, the opportunity, for apple culture in Wisconsin lies along growing summer and fall apples exclusively, because there is the market for them.

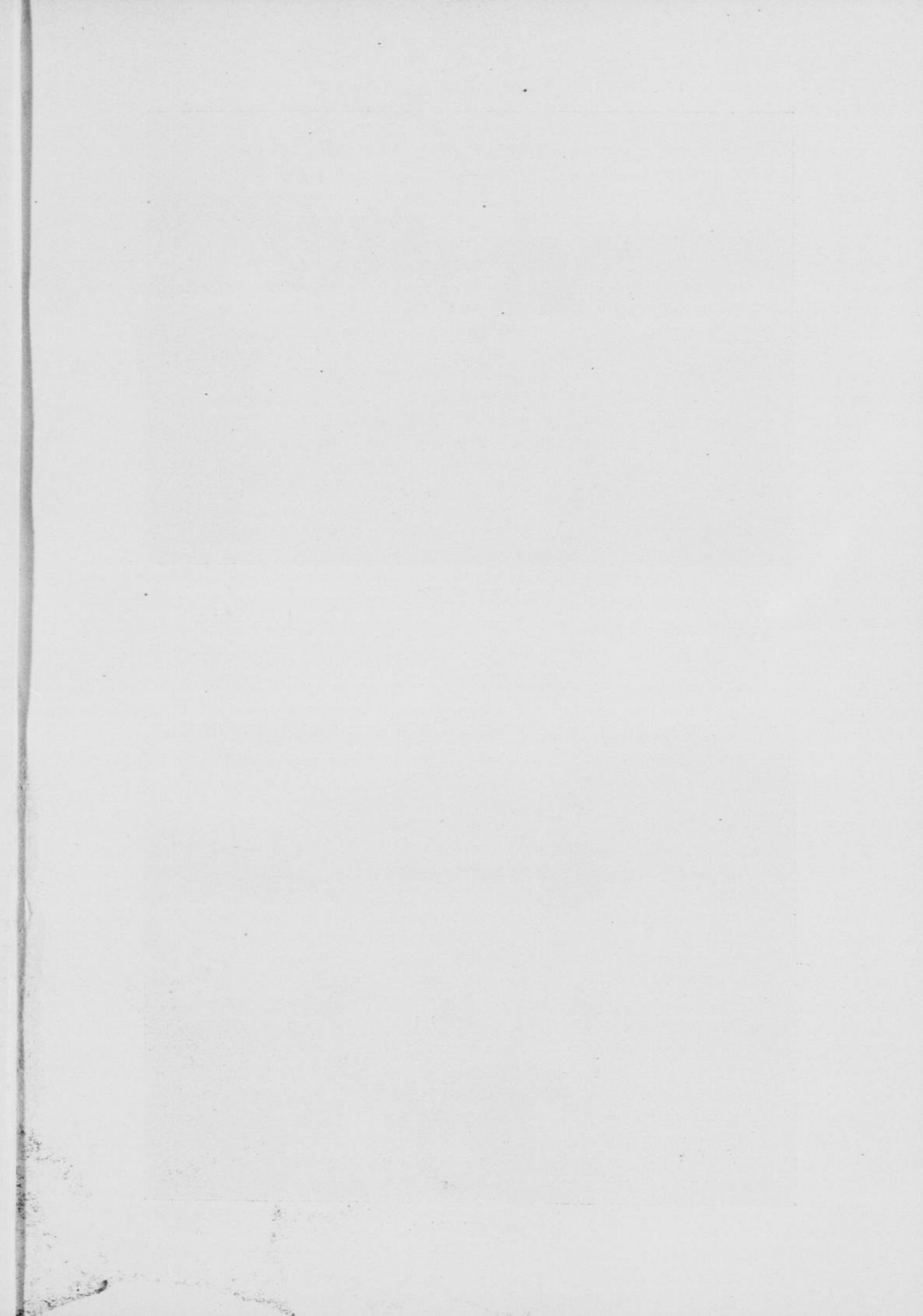
Mr. Richardson: I would like to ask our secretary if he would add the Yellow Transparent and Tetofsky to that list as available?

The Secretary: Why, yes; those are summer apples; I would class the Duchess and Wealthy and McMahon as fall apples, there is always a market for the Transparent; we all know its reputation as a blighter, but there are sections where the Transparent does not blight.

Mrs. Treleven: I would like to ask the secretary if he thinks it pays to grow Duchess apples and take the choice apples to the market and sell them for 25 cents a bushel?

The Secretary: There are two things to be considered, whether it is in producing apples or any other crop, for that matter. One is in growing it, the other is in selling it. Now, we have to combine those two things, no matter how many apples you raise, if you cannot sell them, if you have not the skill in marketing them, your efforts will be in vain. I know how it is about the Duchess in the local market, I know how it is in Wausau, which is perhaps a case similar to the one mentioned. There are a great many Duchess trees in small lots in the vicinity of Wausau and as soon as the apples ripen they will bring them in and peddle them around. As a consequence, the price goes down to twenty-five cents a bushel. That is not the way I would have you raise Duchess apples. I would want you to have a thousand trees and pack them in barrels and ship to the markets that are waiting for them. There are two kinds of orchards, the farmer's orchard and the commercial orchard. We cannot very well combine the two. With the farmer's orchard, we may have to depend exclusively on the local market and that, I admit, is almost always gutted, but when you grow them in large enough quantities so that you can barrel them or a buyer buy them on the tree and give you a fair price for them on the tree, then there is as much money to be made as in growing winter apples. Mr. Toole can give you an idea in regard to marketing the Duchess apple, I think he can tell you that they are growing and selling them around Baraboo for a better price than twenty-five cents a bushel.

Mr. Toole: I would like to say that I think the Duchess is a very important apple to this state and to the northwest generally, and I believe in our section of the country a great mistake is made in picking it too quickly. The same with the Wealthy,





A row of iris.



Perennial phlox.

and it would pay to take at least two pickings, in preference to clearing the tree all at once. Make one picking, then what is left on the tree will increase in size and beauty. In regard to the Duchess and these early apples, we find now that they can be raised anywhere, that is, with suitable selection of site. In regard to the Transparent, it blights so badly with us that we have to leave it to the northern part of the state, where it seems not so subject to blight as with us.

A Lady: I wish to ask why Wisconsin does not box its apples as they do in Washington?

The Secretary: It costs too much.

Prof. Moore: Owing to the fact that it costs more for the Washington fruit grower to produce his crop and to place it on the more distant markets, his fruit has to make a better appearance in order to bring remunerative prices, therefore he has to use the utmost care in packing. The Wisconsin grower must take less for his product and therefore cannot expend so much in placing it on the market. There may be a small quantity of fruit which it might pay the grower to pack as the Washington grower packs his, but the greater portion of fruit packing by this method would be a loss to the extent in which the expense would exceed the ordinary method now used.

A Lady: I understand Washington apples pass by Wisconsin into the eastern markets and are considered much better, if not in quality, yet in appearance, and appearance sells a great many apples. I do not think they taste any better. If Wisconsin apples were done up in paper the same as oranges, they would look nicer and I think would sell better.

The President: The fact is, in order to put apples in boxes and get topnotch prices, they must be extra fine apples.

Mr. Buehler: I tried to put Tetofskys in bushel boxes this year and part of them in barrels. I received \$1.05 per box and \$3.50 for the barrels and it was much more work to pack in boxes than into barrels and more expensive.

BEDDING PLANTS—THEIR USE AND ABUSE.

WM. G. MACLEAN, Foreman of Parks, Madison.

Although nearly every one knows what is meant by the term, bedding plants, it may be well to mention, all the spring flower-

ing bulbs, geraniums, coleus, pansies, etc., as some of the more common. Bedding plants are very appropriately used in connection with buildings, formal drives and parks.

In connection with statuary there seems to be nothing else so well suited as bedding plants, because they add color to a scene that would otherwise seem dull.

Those plants afford opportunity for beautiful effects in formal gardening, but this is apt to be carried to extremes and thus excite the disgust which it merits.

There is one place where bedding plants are most inappropriate, and that is in naturalistic landscape compositions of all sorts. We see nothing so formal in nature pictures. The lines and colors in an agreeable landscape should be harmonious, this harmony and blending is generally lost where bedding plants are employed.

Another abuse of bedding plants is, the fantastic and eccentric shapes, such as carpet beds, butterflies, gates ajar, etc. Why use such precious things as flowers to make, at best, but a poor imitation of something? In designing the beds, let us be governed by simplicity, the simpler the forms, the better, and let the flowers attest their own merits.

Let us not overlook the importance of harmony in color. We have all seen beds, so mixed in color, that the general effect was more like a crazy quilt, than anything else. Remember that colors that would look bad in a carpet, a rug, a wall paper or a painting, are usually bad when combined in plants. Colors are usually stronger in plants, and this is allowable. When I see a building surrounded by spacious grounds, and what would otherwise be a beautiful lawn, but unfortunately dotted all over with little beds of every shape and color, it reminds me of the definition I once heard of the word weed.

The old gardener, (after acknowledging that a weed was an undesirable plant) illustrated still farther by saying, that if a lettuce plant were to come up in the lawn, the lettuce would be the weed, and that if the Kentucky blue grass were to become established in the lettuce bed, the blue grass would be the weed. Perhaps it isn't right to call these plants, in these out-of-place beds, weeds, but one thing is sure, they are very undesirable.

The growing, setting out, and maintenance of bedding plants, make them expensive, and then one must take into consideration the short time which they last. In Wisconsin, tender bedding

plants cannot be planted out until the 10th of June, and in September they are often stripped of their beauty by early frosts.

Before planting we should have a definite object in view. If there is no reason for planting, then do not plant. Bedding plants are usually employed to add color to the scene. Color enhances the beauty of formal design, and so we will always appreciate the merits of bedding plants, properly used, because they add permanent color and pleasing design, to scenes that would otherwise seem dull and unattractive.

HORTICULTURE IN TEXAS AND WISCONSIN.

By A. C. HATCH, Sturgeon Bay.

What I say of Texas horticulture I wish to limit to the so-called "Gulf Coast" country. Texas is so vast a state and has so many different conditions within its border that what is true of one region may not apply to any other. This "Gulf Coast" region is being exploited for winter gardening and semi-tropic fruits. It lies in the extreme southern part of Texas, from Corpus Christi to Mexico. Hundreds of artesian wells with fine pure soft water with a temperature of 85 to 95 degrees are now in use for irrigation over a large share of this country. The soil is made up of the silt washed down and deposited by the streams flowing from the higher country to the northward, through untold ages. These soils vary with the character of material washed down from the higher regions, and may be sand, marl, gummy black soil or more porous alluvial, much of which seems to be very fertile and ideal for gardening, and when properly selected, finely adapted for fruits.

From the standpoint of a northern man this country is very interesting, very alluring and very puzzling. Throbbing and thrilling with energy from the north it is being improved and developed along a multitude of lines that is a source of wonder and astonishment. I will pass this feature by with the observation that much of this development is based upon hope and however promising the future may seem a large share of the natives owning property were ready to sell.

Perhaps some of the strangest features of this region is its marked contrasts in climate that cannot be judged correctly from northern experiences. That drought should be the cause of erosions or washouts along the banks of streams, that it should be the cause of ponds of water and great ditches through the land as well, is very puzzling indeed, while another peculiarity is the fact that its frosts are all imported with north winds. It may have a year's drought or a flood along the Rio Grande that may cover 20 to 50 per cent of the country. It may have fine winter weather when tender vegetation is not killed or it may smite with a frost to destroy all garden vegetation and kill all fruit trees to the ground. While this is called a semi-arid country it may have sufficient rain to grow cotton and sugar cane. On Christmas day you may pick fine roses in great variety from the open ground, you may see climbing vines and hot house plants in the parks, lawns and gardens, yet, if you go into a florist's shop you may learn the astonishing fact that the roses and carnations he sells are grown in Chicago. You may see beautiful fields of Bermuda onions grown on irrigated and perfectly cultivated land destroyed with an almost invisible insect foe. You may see beautiful fields of corn fully grown with corn retailing at 70c a bushel and yet never harvested. You may see wonderful growths on trees and plants, figs particularly bearing abundantly the first year.

Laying as it does between southern California and Florida this country is trying to rival them both in the production of citrus and semi-tropic fruits. For its soil and climate, it will need probably varieties and methods not entirely similar. In Florida, for instance, oranges are cultivated in the winter only, while California cultivates them in the summer only. In California the government maintains about a dozen experimental vineyards to help solve some of the difficulties grape growers have to contend with. Perhaps one of the greatest difficulties is to secure dormancy during winter. When grown from cuttings upon their own roots the vines of what we know as California grapes are liable to grow considerably during the winter months when a light freeze is apt to prove very hurtful. To secure this dormant condition various kinds of southern grapes are used as stocks upon which to graft rasin and other grapes. The Texans have a native variety that does not grow in the winter that it is expected will accomplish this purpose. It has been found that besides this

dormant condition it is necessary to have roots that will resist the attacks of the gall louse and also thrive on lime soils. Then when these have been overcome it is just as essential to protect from insects and fungus diseases as it is here. A very interesting method of propagation is practiced. A single bud of the desired kind is doweled with a bit of wire upon a cutting of wild vine and the cutting thus grafted is planted.

In citrus fruits it is hoped to secure this winter rest by budding the Tangarine and Mandarin type of orange upon a common sour orange called *trifoliata* that is itself dormant during winter. In peaches it is hoped to secure what is adapted to the country from the south Chinese peaches of which the Elberta is a hybrid or cross, for it has been found that Persian peaches that thrive further north are not adapted to that climate.

That the strawberry can be profitably grown had not been demonstrated. Plants set in December bore some fruit the first of March just as plants set here in April might bear in July. A fair set of plants might be secured possibly from plants set in September but that such plants would stand summer heat is another question. It seems that it is the practice to plant wind-breaks of castor beans, tamarisk, encaluptus and other things to protect orange and other trees and it is likely if strawberries are carried successfully through the windy season of spring and the heat of summer they would need to be protected with a shade and wind break of sorghum or something of that sort. With the retail price from 25 to 40c per quart we of Wisconsin would think there would be money in strawberry growing unless the difficulties of production are too great as they may be.

Perhaps it will help to realize some of these difficulties if we consider insect life there. While much of it is dormant during winter a few sorts were very active, notably two kinds of ants. One, a little chap about an eighth of an inch long that seemed to be everywhere present and very hungry for meat, butter, grease, and food generally, so that it was necessary to place the legs of dining tables, cupboards, etc., in dishes of water or kerosene to prevent them from taking possession. If the table happens to touch the wall or even a corner of the table cloth touched a chair it would make sufficient bridge for the little mites to get into the food much to the wrath of the cook. When you attempt to get them off you'll think they bite but they don't, they sting just as a bee does. I learned of a larger kind that stings much more se-

verely than a bee or wasp does. The kind of ant that is of more interest to fruit growers is the cut ant—a good sized chap that has a big black head. His business seemed to be to cut pieces out of the leaves of peaches, oleanders, etc. and carry them into holes in the ground. So numerous and industrious are these little fellows that they will often entirely defoliate a tree and carry the leaves into the ground perhaps thirty feet away, making a very distinct trail all the way. Another insect abundant in the whole country where trees and brush grow is a species of weevil or snout beetle. As most of the trees and shrubs bear beans quite profusely they seem to have plenty of food for their depredation, and they are ready to infest all grain, etc., the country may produce. That they would infest fruits is not certain but I should not like them for bed fellows at any rate.

In all this region I saw very few plants of any kind that I ever saw before. Where the same species exists that we have in the north it usually is a different variety and while very interesting and some of it exceedingly beautiful much to be seen is not at all pleasing. Indeed, much of the vegetation is extremely ugly. Trees, shrubs and plants loaded with thorns, spines, briars, and prickers, or dwarfed, stunted, dying or dead with parasites, gray and ashen in color are certainly not the most cheerful things to put in a landscape. Even in the parks of the larger cities one of the chief attractions is the great quantities of Spanish moss festooned in profusion from the branches of its giant live oaks and pecan trees.

One more feature of this sunny south I wish to note, and that is the absence of grass as we have it in the north. When lawns are attempted the grass is planted and not grown from seed. There is what appears to be grass, probably is grass, but we don't call it grass in Wisconsin. In wandering around one day I found a nice field of it and being weary I sat down to rest but got up very quickly as I found I needed half-soles on my pants, as the stuff was good old-fashioned sand burs. They have a sort of grass that is similar to quack grass but the roots are from $\frac{1}{4}$ to $\frac{1}{2}$ of an inch in diameter as I saw it growing. Oklahoma has outlawed this grass although it is grown some in Texas for hay just as they grow sorghum and kafir corn, one acre of which will easily feed a cow as several crops can be cut from one planting.

Perhaps one of the greatest contrasts that fruit growers of the north can appreciate is the keeping properties of fruits and vege-

tables. During summer and nearly all winter everything soon gets stale or over ripe. In the culinary line not much can be done in saving food supplies and new supplies are secured from day to day so that the people literally live from "hand to mouth."

While it is possible to grow a large variety of fruit in the south much of it lacks quality to make it so extremely valuable and after all with our longer seasons for some fruits and its keeping qualities considered we of Wisconsin can get just as much and more comfort out of our products than they can in the "sunny south." While we complain of our severe cold winters they really are a source of blessing to us that gives us dormancy and rest for our trees, plants and vines, and a reasonable assurance of crops every season.

For beauty of landscape as affected by vegetation, in grace and splendor of forms, in richness of coloring of foliage, especially in autumn over the hills of southern Wisconsin I have seen nothing in all the south so pleasing and satisfactory. I may go still further and say that in the beds of shrubbery growing upon the campus of our own State University at Madison and along its driveways I have seen more inspiring loveliness of form, foliage, fruit, and color than I ever saw elsewhere. And when I learned that during fifteen years about a thousand citizens of Madison had been planting more than 40,000 trees and shrubs along the driveways and in the parks and making improvements worth thousands of dollars by voluntary contributions I felt proud that such public spirit exists in our own state.

When we read of fruit farms in the south or far west selling at such fabulous sums we may feel as though Wisconsin is not in it at all. As far as I know, however, especially in the south they have the same difficulties to contend with that we do here and often more difficulties and greatly intensified at that. When done with faith and good sense and energy we need not despair of good returns, and indeed we need not blush in making comparisons. When land right here in Sturgeon Bay is earning a net sum per acre and has been doing it for several years to pay the interest on more than \$2,000.00 at 7%, surely we need not complain. If these facts are appreciated at their full value and acted upon there will be no more occasion to go to other lands to secure the blessings of life in fullest measure.

REPORT OF COMMITTEE ON AWARDS.

Summer Meeting.

- Branching Asters: 1st Mrs. A. L. Hatch; 2nd Mrs. L. W. Barnes.
 Dwarf Asters: 1st Mrs. D. D. Howlett; 2nd Kilian Simon.
 Single Dahlias: 1st Mrs. L. W. Barnes; 2nd Mrs. D. D. Howlett.
 Double or Show Dahlias: 1st Mrs. L. W. Barnes; 2nd Mrs. D. D. Howlett.
- Blazing Star Liatris: 1st E. S. Hildemann.
 Perennial Phlox: 1st Mrs. L. W. Barnes; 2nd Mrs. D. D. Howlett.
 Gladioli: 1st Mallory & Bridge; 2nd Mrs. L. W. Barnes.
 Pansies: 1st Mrs. L. W. Barnes; 2nd Mrs. A. L. Hatch.
 Stocks: 1st Mrs. L. W. Barnes.
 Sweet Peas: 1st Mrs. A. L. Hatch; 2nd Mrs. L. W. Barnes.
 Single Petunias: 1st Mrs. L. W. Barnes; 2nd Mrs. D. D. Howlett.
 Double Petunias: 1st Mrs. L. W. Barnes; 2nd Mrs. D. D. Howlett.
 Verbenas: 1st Mrs. L. W. Barnes; 2nd Mrs. D. D. Howlett.
 Cosmos: 1st Mrs. D. D. Howlett; 2nd Mrs. L. W. Barnes.
 Display Annual Garden Flowers: 1st Mrs. L. W. Barnes; 2nd Mrs. D. D. Howlett.
 Best Bouquet Garden Flowers: 1st Mrs. L. W. Barnes; 2nd Mrs. D. D. Howlett.
- Golden Glow: 1st Mrs. L. W. Barnes; 2nd Mrs. D. D. Howlett.
 Marigold: 1st J. Fuerestein.
 Achillea: 1st Mrs. D. D. Howlett; 2nd Mrs. L. W. Barnes.
 Shasta Daisy: 1st Mrs. D. D. Howlett.
 Daisy: 1st Mrs. D. D. Howlett.
 Dianthus: 1st Mrs. D. D. Howlett; 2nd Mrs. L. W. Barnes.
 Larkspur: 1st Mrs. L. W. Barnes.
 Platycodon: 2nd Mrs. L. W. Barnes.
 Perennial Pinks: 2nd Mrs. L. W. Barnes.
 Rudbeckia Barbaria: 1st Mrs. L. W. Barnes.
 Tiger Lily: 1st E. S. Hildemann.

POTTED PLANTS.

- Fuchsia: 1st R. T. Bagnall.
 Begonia: 1st J. Fuerestein.
 Sword Fern: 1st J. Fuerestein.
 Asparagus Plumosus: 1st Miss Pauline Johnson.

WILD FLOWERS.

- Golden Rod: 1st H. Stephenson; 2nd Mrs. D. D. Howlett.
 Asters (native): 1st E. S. Hildemann; 2nd Mrs. D. D. Howlett.
 Boquet Wild Flowers: 1st Mrs. D. D. Howlett.
 Ornamental wild fruits: Mrs. D. D. Howlett.
 Col. wild flowers: Mrs. D. D. Howlett.
 Sweepstakes awarded to exhibitor receiving largest number of 1st
 premiums on flowers and potted plants: Mrs. L. W. Barnes.
 Greenhouse Flowers and Plants:
 Ferns, (evergreen): Swan & Son.
 Palms: Swan & Son.
 Greenhouse plants other than palms and ferns: Swan & Son.
 Floral Design: Swan & Son.
 Roses and Carnations: Swan & Son.

FRUITS.

- Yellow Transparent: 1st W. I. Lawrence; 2nd E. S. Hildemann.
 Sops of Wine: G. W. Reigle.
 Duchess of Oldenburg: 1st E. S. Hildemann; 2nd B. F. Otis.
 Barloff: 1st E. S. Hildemann; 2nd D. E. Bingham.
 Beautiful Arcade: 1st E. S. Hildemann; 2nd F. W. Cheeseman.
 Switzer: 1st John Hanson; 2nd E. S. Hildemann.
 Wolf River: 1st J. G. Buehler; 2nd John Hanson.
 Wealthy: 1st J. G. Buehler; 2nd W. I. Lawrence.
 McMahan: 1st J. G. Buehler; 2nd F. W. Cheeseman.
 Fameuse: 1st W. I. Lawrence; 2nd J. G. Buehler.
 N. W. Greening: 1st D. E. Bingham; 2nd W. I. Lawrence.
 Iowa Beauty: 1st W. I. Lawrence; 2nd D. E. Bingham.
 Newell: 1st D. E. Bingham; 2nd J. G. Buehler.
 Lubsk Queen: 1st D. E. Bingham; 2nd J. G. Buehler.
 Red Astrachan: 1st W. E. Marshall; 2nd W. I. Lawrence.
 Alexander: 1st J. G. Buehler; 2nd W. I. Lawrence.
 McIntosh, Red: 1st W. I. Lawrence.
 Maiden Blush: 1st W. I. Lawrence.
 Talman Sweet: 1st W. I. Lawrence; 2nd John Hanson.
 Price's Sweet: 1st Mrs. D. D. Howlett.
 Gideon: 1st J. G. Buehler; 2nd Mrs. D. D. Howlett.
 Haas: 1st J. G. Buehler.
 Utter Red: 1st J. G. Buehler.
 American Codling: 1st J. G. Buehler.
 Tetofsky: 1st W. E. Marshall.
 Okabena: 1st J. G. Buehler.
 Windsor Chief: 1st J. G. Buehler.

Hawkeye: 1st Wm. Toole.
Baraboo: 1st Wm. Toole.
Beatty: 1st Wm. Toole.
Wolf: 1st Wm. Toole.
Dame Aubert: 1st Wm. Toole.
Early Red: 1st Wm. Toole.
French Damson: 1st Wm. Toole.
Willard: 1st W. I. Lawrence.
Red June: 1st W. I. Lawrence.
De Soto: 1st J. G. Buehler.
Wyant: 1st J. G. Buehler.
Weaver: 1st J. G. Buehler.

CHERRIES.

Red (sour): 1st Mrs. A. L. Hatch; 2nd W. I. Lawrence.
Red Raspberries: 1st Nick Jacob.
Blackberries: 1st Nick Jacob; 2nd A. Birmingham.
Exhibit Forest tree and shrub seeds of commercial value: F. M.
Graase.
Exhibit Honey: Klön Beyer.

PEARS.

Bartlett: 1st W. I. Lawrence.
Besnianska: 1st J. G. Buehler.

Transactions of the Winter Meeting

Annual Convention, Madison, January 12, 13, and 14, 1909.

Tuesday Afternoon,—January 12.

The meeting was called to order by President R. J. Coe at 2 p. m.

Prayer by Mr. Irving Smith.

PRESIDENT'S ADDRESS.

R. J. COE.

Again we have met in annual convention to review the work of the past year, to tell of our successes and failures, to get and to give information, to gain inspiration for our work, and above all, to get a new and larger stock of enthusiasm, for after all is said and done, enthusiasm is the one thing above all others that accomplishes things, it is enthusiasm that spurs us on to undertake and carry through every great work. In fact, it is enthusiasm that does the world's work, and without it no man ever has or ever will make very much of a success of any business in which he may be engaged.

Whatever we have done during the past year, whether of success or failure, is now a matter of history and can only be recorder, not changed.

We have all seen, and probably most of us have helped, (when there was a fall of damp snow) to roll a snowball and have seen that at first it was very small, grew very slowly and did not take up much snow, but as it was rolled over and over, it took up more and more with each revolution, until at last a single revolution did more than the first hundred. The growth and influence of our

society may very well be compared to this snowball. It struggled along for a number of years without making very much of a stir in the world and its circle of influence was not very great, but it has been growing and growing, until now it is gaining as much in influence and usefulness in a single year as it did in ten or twenty during the early years of its life.

The question may be asked, "What is the Wisconsin Horticultural Society doing to earn the reputation it is getting as being one of the foremost, if not the very foremost, of state societies?" It is doing just the things that the people need. It has established and is maintaining at the present time nine trial orchards and two more located well distributed over the state, each one for a definite purpose; those in the north largely experimental as to varieties to demonstrate what varieties of tree fruits, if any, can be successfully grown. Those farther south, with a few varieties to try to show that commercial orcharding can be made a profitable business venture. At Sparta, that great small fruit center, an acre of grapes has been planted for trial and it is hoped that this will prove a success and I can see no reason why it should not. If so, it will extend the length of the fruit season and add very materially to the incomes of the fruit growers of that section.

I believe the time has now come when we should broaden our field of labor and do something along the line of ornamental planting, something that will show us what to plant and how to arrange the planting for best effect. The time was when the home was confined to the four sides of the house, but that time has gone, never to return.

As the people are living more and more out of doors, the grounds surrounding the house are as much a part of the home as is the house itself. The decoration of the home grounds is an art of itself, not well understood by the most of us, and if we can have a goodly number of object lessons of this kind scattered throughout the state, it would be a wonderful help to all in those sections in the planting of and beautifying the home grounds. I believe flowers and plants have a refining influence on our lives, and if we can have plenty of them, our homes will be better and happier for the having.

I want my own home (and I know you all feel the same way about your own homes) to be such that when the children come

to leave it, they may look back to the old home as the dearest, sweetest spot on earth.

I think our secretary has in mind some plans for providing these object lessons, and if he has, let us give him all the encouragement and help we possibly can.

I think it is entirely within the province of this society to encourage the planting of trees other than fruit trees. Wisconsin has urgent need of an army of tree planters. It is probably safe to say that a thousand large trees are cut for every small one that is planted. It only needs a little mathematics to show us where we will land in the near future if the present rate of destruction is kept up without some provision being made to keep up the supply. Then, too, the bulletins that have been issued at frequent intervals have been the means of disseminating a vast deal of valuable information. Take, for instance, the seedless apple fakirs that would now be taking thousands of dollars from our state if they had not been so thoroughly shown up in our reports and by a special bulletin. They found Wisconsin too warm a state to live comfortably in and have moved on.

And there is the man who claims to be sent out by this society to teach the farmers how to prune their orchards, and then in order to pay expenses had to sell a bill of nursery stock, "from Ohio." He also found the Wisconsin climate a little too warm for his health; see bulletin No. 14.

The contract orchard men have also received a share of our attention, and if they have not already departed from our inhospitable shores, will undoubtedly soon do so.

Of course it is our secretary who has borne the brunt of the battle and done all the work, but he has had the horticultural society to stand back of him and to hold up his hands in the good fight, and with this moral support he has been enabled to accomplish vastly more than he could single handed. You see we are perfectly willing to let our secretary do the fighting and we take the credit.

SMALL FRUIT SESSION.

The President: A horticultural meeting would hardly be a true horticultural meeting unless we had some strawberries mixed

in, and I see our secretary has recognized this fact by placing the subject on our program for the first session, and the first paper is to be by Mr. George J. Kellogg.

STRAWBERRIES FOR 1908.

By GEO. J. KELLOGG, Lake Mills.

Notes on New Varieties.

"Outlander" 4 oz. for one berry reported to me when I was in Washington D. C., by Col. Brackett, weighed by him so there can be no mistake of its size; but the question is how was it grown—probably one berry to a plant? This would only do for the amateur.

Then the Pride of Michigan reported from Milwaukee at our last winter's meeting, "*four to a quart*;" this we doubted and wrote to the grower and found it was "*five to a pint*." Well this was pretty good but they were grown by one who is an expert and by the free use of commercial fertilizers. We have it in just good garden culture and will know how it does alongside other known varieties.

What we want is a berry that needs to be quartered, as good as the wild berry, that will stand any abuse, fight the insects, beat the blight, scab and fungus diseases, winter without mulch, not affected by dry rot or winter root killing or frost and bear at the rate of 800 bushels to the acre. This is only five bushels to the square rod and that is what the old Wilson did in Janesville.

Who knows but the "Norwood" will do it, or the "Fendall," the "Highland" or the "Bountiful," *Highland, the best of 146 Varieties, Ohio Station.*"

When I visited Prof. Van Deman in Virginia, he said "Pan-America" was the only ever-bearing variety that he thought worthy propagating. I planted that the 30th of last April and with it "Autumn." I bought them to test their productiveness, let them go right at it; they commenced to bear as soon as they got started to grow and every layer bore until the latter part of the season. The Pan-America put out but few runners. The Autumn gave a goodly number, the old plants and the early layers bore from June till December. Sept. 22nd I dug a layer of Autumn that had 118 berries, buds and blossoms, which I potted

and showed at Jefferson county fair and Sept. 29th I dug another from the same row and took to Beaver Dam that had 58 berries, buds and blossoms; the fruit of both kinds is fair size considering the great quantities it bore, good quality and firm. I measured fruit three inches in circumference; they both went under winter mulch full of fruit, except the late set runners. How they will winter I can't say. I hardly look for a pick of ripe berries when I take off the mulch. What I fear is that neither of them will grow plants fast enough; they certainly will not if allowed to fruit.

Now we want to know what any of you have learned the past season that is of real benefit; have you solved the root rot, the drouth and ice winter killing? By last winter's report you can prove black is white and white is black. I believe a dry fall and an open winter does the killing. A friend of mine in Illinois who has acres in fruit, is troubled with white grub on new plantings where the ground has been well cultivated for years. Friend Richardson, I believe, can plant on June sod and have no trouble. How many are spraying for blight, scab and insects? Has any one a better variety than Dunlap? Has any one an early berry that is satisfactory and what is the best late variety?

The President: This paper is now open for discussion.

A Member: How will the increased size probably affect the quality of the fruit?

Mr. Kellogg: The larger berries are of good quality, but I do not think any of our big berries are as good as the wild berry.

Mr. C. L. Richardson: Tell us in some way, comparing with standard varieties, the running propensities of the Autumn and Pan-American, so that we can get some idea as to how they compare with well known varieties.

Mr. Kellogg: The Autumn I should think gave about ten plants to one plant set in the spring, while the Pan-American did not give three plants. I let it go right to fruit, I wanted to see the fruit. If I had kept off the blossoms, as we should do from new plantings, the Autumn would have made a fair plantation of new plants, while the Pan-American would have made but very few.

Mr. M. S. Kellogg: I can give a little information as to those two varieties. I set out a few varieties at Janesville; these

were not allowed to bear, and the Pan-American plants made little, if any, increase above the plants set; we have perhaps twice or three times as many plants now as when set; the Autumn has probably given us about fifteen times as many plants as we set out.

A Member: I would like to ask Mr. Kellogg the best yielding and best late variety.

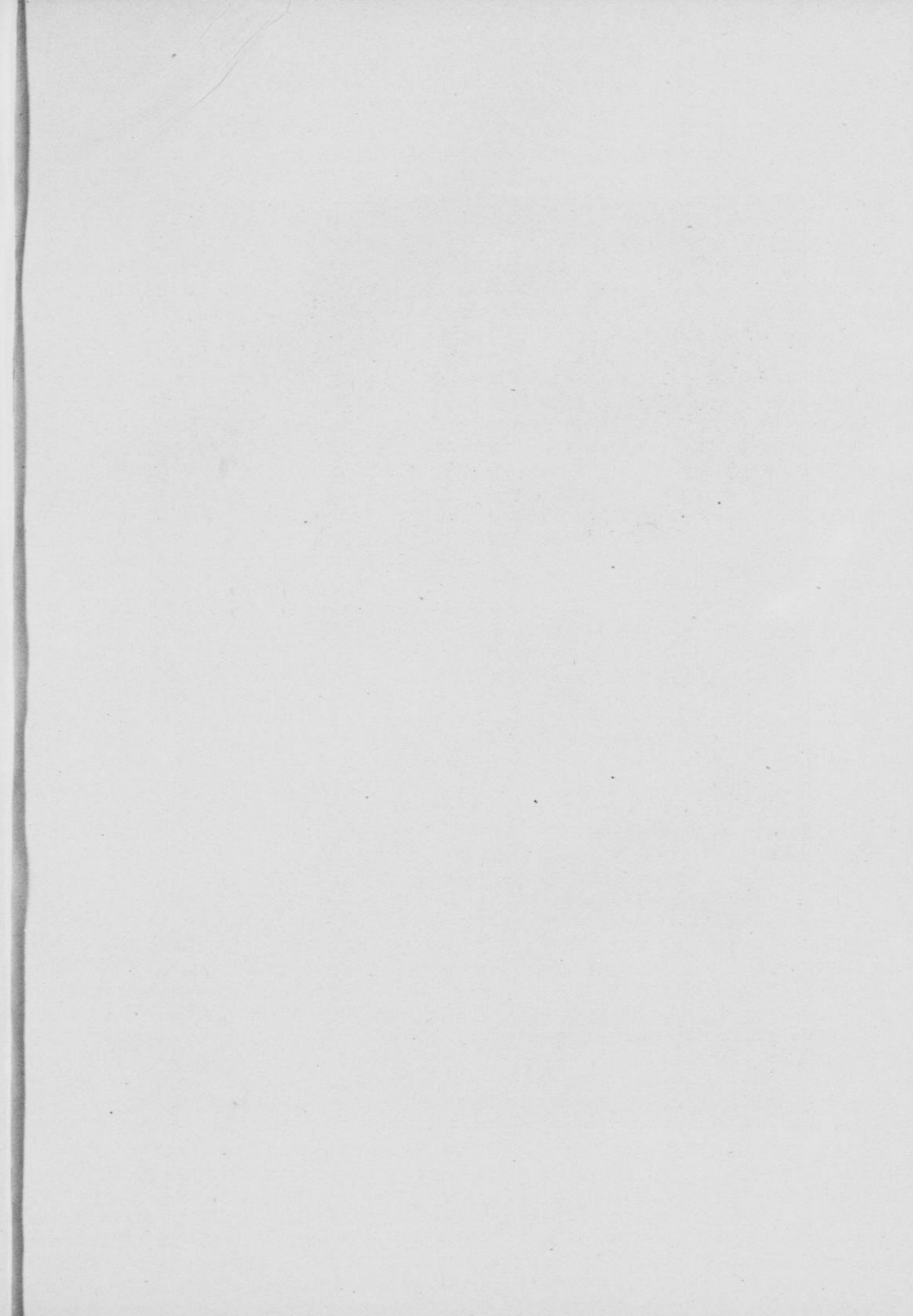
Mr. Kellogg: I do not know of any better, if you come right down to one, than the Dunlap.

The Member—Do you call that a late variety?

Mr. Kellogg: Well, I think the Brandywine is the best late one I have among eighty kinds.

Mr. Richardson: I should like to recommend the Nettie, but the Nettie is a pistillate. If we plant with some late staminate, it is the most satisfactory of anything we have found up to the present time. There is no doubt that the Crescent and the Midnight and Uncle Jim are very good late staminate to plant with it.

Mr. Riehl: Inasmuch as I have charge of an Experiment Station down in Illinois, it might be interesting for me to mention some of the varieties that do well with us. The best early varieties we have of the newer ones is Oakes' Early and Redbird, our very best recent introductions. They are very prolific. Redbird, however, is too soft for shipment, it would be all right for home market and home use. Oakes' Early is firm, dry, medium size. Both are very satisfactory. A good medium variety is Abingdon, that has given splendid results for the last three years. In the way of late varieties, the one just mentioned, the Nettie, has been satisfactory for years, excepting that it must be pollenized with other varieties. That, however, is easily done, the Dunlap will pollenize it very nicely. The Dunlap I regard as one of the best pollenizing varieties on the entire list. It blooms early enough to pollenize the early ones and it blooms long enough to catch the late ones. In the way of late, the Sample almost leads everything. It begins to ripen about mid season and continues very late, perfecting all its fruit when well pollenized. The Hunn is an older variety that does well almost every year. That is also a pistillate and needs to be pollenized. However, we have one recent introduction called the Peter, which is strongly staminate and a good pollenizer. That I can highly recommend, it is productive, strong, a vigorous grower, firm and of the very





First Prize Exhibit of Wealthy Apples, at the Wisconsin State Fair, 1908.

largest size. It combines all of the very best market points. I could name over twenty-five or more varieties that I have tested and some of them very good.

Mr. Kellogg: What do you know of the Howland?

Mr. Riehl: The Howland does fairly well with us, but not well enough that we feel like retaining it in our fruiting beds. This shows how local some varieties are in their habits. In recommending varieties, we should always try to recommend something that is not confined to one locality, but that does well all over the country. For this reason the Dunlap almost stands at the head of the entire list of strawberries, as the Concord does with the grape.

Mr. M. S. Kellogg: Do you find the Sample ripens evenly with you, without green tips?

Mr. Riehl: Splendidly, even when it is right down among the litter.

Mr. Hager: The terms "early and late" are relative terms. Before we proceed any further, I should like to have them defined. How much earlier these early varieties, and how much later these late varieties are than some standard sorts.

Mr. Geo. J. Kellogg: I never found any early ones that there was any more than five to fifteen minutes difference, but the late ones will come two weeks later than the main crop.

Mr. Hey: How about the Stevens from Champaign?

Mr. Riehl: We have fruited it and it is a fairly good late variety, but we have other better ones and have dropped it from our list.

Mr. Smith: What do you know of the Miller?

Mr. Riehl: The Miller is a right good berry; it is firm, making it a splendid shipper, having a bright glossy appearance as if it had been varnished, making it stand up well. It is a good yielder.

Mr. C. L. Richardson: Also, if the season at the time of blooming is at all unfavorable, it runs so badly to buttons that it is almost worthless. If the season is all right, it is all right, but after two or three years' experience I gave it up, it ran to buttons so completely.

A Member: I should like to ask if others have had the same trouble that we have had with the Dunlap. We think we are going to have an enormous crop, but all at once the Dunlap has stopped and we had to look to other varieties for berries.

Mr. Hey: We have had the same experience. It seems as if there are lots of blossoms of the Dunlap, but either they are not fertilized, or they do not fertilize themselves, or there is something wrong somewhere; we think we are going to have a first class crop, then we find the berries are all gone. Another berry we had several years ago we thought a great deal of, we lost the plant, we called the "Staples," a dark round berry.

Mr. Riehl: The Staples was introduced some twenty years ago. It is a roundish berry of high quality and it did right well at that time, but we considered others better, the Warfield and Dunlap and those other varieties came in and we dropped it from the list.

Mr. C. L. Richardson: We had the Staples for a long time. We discarded it. I think it is a relative in some way of the Warfield; it is subject to the same difficulties as the Warfield. The roots are too short. You get it in a light or sandy soil and it cannot withstand the drought and it absolutely renders the berry worthless. We were obliged to discard it on that account and also it is such a very dark color that if it gets a little bit old, if you cannot keep it picked up promptly, it has a dark, unpleasant appearance in the crate and your customers will not take it. Now, in regard to the Dunlap, we have had that same difficulty that the gentleman from Illinois spoke of, but if you get your Dunlap spread out thin enough it will help, at least that has been our experience. That is the only thing I can suggest. I know I have never had trouble with the Dunlap where I had them spread out thin enough, but if they overcrowd, then the lowest blossoms fail and the crop ceases in the middle of the season. Get them out so they are four or five inches apart, do not be afraid that they are going to be too thin. If you get vigorous, well rooted plants, they will be all right.

Mr. Sperbeck: I think the Dunlap is one of the best I have planted, but I think they will get too thick if you allow them to run, and I think the soil has a great deal to do with it. The soil that we have is clay or lighter soil, and the Brandywine is one of the best berries with us for a late bearer after the Dunlap are gone.

Mr. Culbertson: I know that a farmer that had quite a large patch of berries had some little insect cut the little stem that supports the blossom and nearly every plant was lost. Is there a remedy?

The President: I take it, it must be some sort of cut worm?

Mr. Culbertson: No, it is the strawberry weevil, the insect looks like curculio on plums or apples, an insect with a long proboscis and it cut the little stem that holds the blossom, no worm.

Mr. Richardson: Burn over your bed, plow up the ground and set clean plants distant from the old plants. That will help.

Mr. Smith: Every year we try an experiment which I can recommend to you as being of interest in the manner of showing what a great diversity of taste there is. We take a dozen or more of common strawberry boxes and number them, then we bring them in and set them on a table and have a key to these numbers and invite different ones to sample those berries, and then at the same time remark on the quality, on the quality alone. Then we average the remarks and from that we decide which is the best quality of berry for that year. Two years ago the Jessie was considered the finest quality berry. It is a luscious berry, but it is rather a shy bearer, so it cannot be generally recommended. Last year the Ridgeway was decided upon as being the finest berry, it does well with us. Then we meet and talk over the different qualities, the prolificness, color and size, and in that way we get a dozen of our fine berries which may do well in our locality, but we find when it is scattered through the State there are other varieties mentioned that do not always do well. Now, in general, all around quality we find the Senator Dunlap, the Lovett and the Miller are three of the best berries with us.

Mr. M. S. Kellogg: Has anybody found a better berry for general market than the Dunlap planted over a wide range of country? It seems to me, with the experience we have had with it that there is none better. The question was brought up whether a perfect variety planted alone would yield as well as a pistillate variety when fertilized. We had a block of Dunlap from which we had the finest berries I ever saw, without any exception, the berries were unusually large, fine quality and yielded probably one third better than our other plantings which had the same care and culture. Of course our crop this year was not a full crop on account of too much moisture at the beginning of the season, the blossoms blighted on some varieties and those that were not strong in pollen did not mature their crop fully, but from our standpoint I should say the Dunlap is fully 20 per cent ahead of anything else we have for a general market crop.

Mr. Hey: How much do you get per square rod?

Mr. Kellogg: This block of Dunlap that we had contained about an acre and a third, and I think, if I am correct in my memory, that we had four pickings from that piece, averaging every other day about 100 to 125 cases, so that they gave considerably over 400 cases to the acre throughout the season.

Mr. Hey: We have heavy clay soil and strawberries usually do well there, but the Dunlap is no comparison with the Warfield; with us, the Warfield is the better of the two.

Mr. Hager: I want to emphasize the fact that was brought out here, and that is, be careful not to let the Dunlap get too thick. I think that is a mistake we all make. I go in with a hoe and cut them out.

Mr. Hey: We practice the double hedge row system and they were rather thin, too thin to suit me.

Mr. Daub: Has any one had experience with the Belle?

Mr. Richardson: I have them; I have not had them long enough to make any satisfactory report, though I doubt if they are going to be as late as reported, not as late as Midnight, Nettie or Uncle Jim.

A Member: Does anybody know anything about the Cardinal?

Mr. Riehl: The Cardinal is one of the nicest looking berries you can imagine, it is attractive, firm, in every way one of the nicest berries you can wish to grow, but when it blooms the blossoms are set out on long thick stems and when it sends them out and a frost comes, it is more likely to be caught and for this reason we are unable to get a satisfactory crop. I cannot recommend it. In every other way, it is splendid.

Mr. Richardson: Get it out in Wisconsin in the open field and it does not seem to do very well. They cannot hold their own with the Dunlap, Warfield, Bederwood and Haverland.

Mr. L. G. Kellogg: We have with us Mr. C. B. Cook as a delegate from the Michigan State Horticultural Society. I take pleasure in moving that Mr. Cook be made an honorary annual member of the Society and invited to participate in the discussions of the meeting.

Motion put to vote and carried.

The President: We are glad to welcome Mr. Cook to our Society, and you who have the program will notice that Mr. Cook is on the program for a paper on "Fertilizers for Small Fruits."

FERTILIZERS FOR SMALL FRUITS.

C. B. COOK, Owosso, Mich.

The best methods of soil building are uppermost in the minds of every student farmer. No one subject that we can consider is more vital to the lives and success of every American Citizen. Productive lands, well maintained and carefully presided over by intelligent and skillful caretakers become the greatest asset of a commonwealth.

In the north central states the subject of soil building has never become paramount; for the soil is naturally enduring and productive and our problem—as we have seen it—has been to maintain rather than to build a better foundation for farm life. Incidentally chemical research in our section, through the short sightedness of many of our better farmers has helped to postpone general activity in this line. From the fact that most of our soils by analysis show plant food content sufficient to last for a thousand years of continual cropping has helped us to arrive at an erroneous conclusion—namely that the best soil management was a remote problem and well enough left to generations yet to come. We have too often lost sight of the fact that this great store of soil fertility has been mostly locked up in insoluble forms by a master hand and so preserved in reasonable proportions for countless generations yet to come, and hence the man who resolves to overdraw his deposit at the cost of others that come after him soon comes up against a divine law that says most emphatically “Thus far shalt thou go and no farther.” While misuse and reckless cropping result in a rapid degeneration of any normal soil, the reverse method, we are happy to say, when thoroughly and timely applied is also followed by most encouraging results.

Soil management for the fruit crop requires greater care and closer oversight than do other farm crops. Small fruits and especially those of a viney nature are easily thrown out of balance by improper fertilizing.

The possibilities of the small fruit area under ideal conditions is almost limitless. No one element has any more to do with the success of this venture than does a thoroughly congenial soil.

The elements that go to make a given soil thoroughly adapted to the best use of the fruit area are manifold. In this connection we can eliminate all but those forces that directly effect the congeniality of a given soil for the fruit crop and those food elements that must be included. Considerable experience in this line under greatly varied conditions leads me to emphasize the local phase of this subject. We can get many suggestions by studying other successful fruit plant feeders but after all in the final we must work everything over and suit our own peculiar conditions. Even on the small farm a variety of soils makes experimental work in several places vitally essential if we would get the best out of the small fruit area.

That system of soil building is only most profitable when it is so conducted as to give us the greatest amount of net value from a given area. We are just waking up to the possibilities in this line, and only by the occasional masterful results secured by some close student of his own conditions can we get an adequate idea of the limitations of this subject.

In a general way we must have a soil provided with enough humus or vegetable matter to make its mechanical condition perfect but not overdone in this line. The last state is often worse than the first. Closely connected with this vital supply of vegetable elements is a sufficient amount of nitrogen to run the fruit plants to their highest degree of fruiting excellence. To do this requires close observations in all lines to guard against an overgrowth of vines at the expense of fruit buds. Too much nitrogen is likely to throw the fruit plant out of balance and so produce an excessive amount of spindling foliage with a corresponding decrease of fruiting impetus, usually made evident by imperfect crowns, poorly developed fruit stems, and often few and unsatisfactory blossoms.

On most farms where a short rotation is employed with clover as a leader, and considerable humus and nitrogen furnished by the product of the stable, sufficient nitrogen and vegetable matter can be supplied on the farm for the best results.

Thus we have supplied at nominal expense the most expensive element needed in fruit growing. The other vital elements may still be lacking in sufficient amount to give the fruits enough mineral matter to thoroughly balance and supplement the elements mentioned. In the fruit field we must consider clover and stable manure as a one-sided element of fertility likely to fur-

nish too much vine producing food with comparatively little phosphoric acid and potash. In the case of the soil not having liberal quantities of the latter mentioned elements naturally supplied a liberal dressing of stable manure may be worse than no fertilizing at all. In order to determine the amount of available phosphoric acid in the soil it is well to experiment in a small way with those foods to prove the soils. Over a greater part of the clays of the north central states phosphoric acid can be profitably applied in greater or less quantities depending on the personal equation of the soil in hand. Occasionally heavy application of this element bring returns greatly out of proportion to its cost. On the lighter sands and gravels often potash also, will be needed to bring out the full benefit of the other elements present and keep the plants in balance.

To use these elements separately and in combination in experimental ways on small plats with ample space left for checks where no minerals are used, every fruit grower can soon determine for himself, just the limitations of these elements on the different kinds of soil on his farm. A few experiments that this scheme naturally suggests can be developed and carried out by each fruit grower for a series of years to the marked benefit of the operator. A ready mixed fertilizer unless it has a formula especially compounded to reach ones local conditions must be regarded as unsuited for this kind of work. A little acid phosphate and potash in some form quite free from the other elements, used in connection with stable manure in carrying proportions will give us definite results either for or against increased expenditures in this line.

Another element that vitally affects soil building and crop feeding is the character of the season. With the delicate structure of small fruits it is quite easy to over fertilize in wet seasons and consequently under feed in dry seasons, hence in any system of experimental fertilizing the character of the season must be taken into consideration. Under intensive methods experience often demonstrates the desirability of making two or more applications of concentrates in a growing season thus fitting more closely the formula used to the season as well as the soil and crop requirements. Again in a cold backward spring a very light application of a thoroughly soluble fertilizer may help the starting vines forward to an unexpected degree by simply furnishing a bit of available fertility at a period when owing to unfavorable

climatic conditions the plants make very slow progress for the want of available plant food at a critical time when but little natural food is in condition to be extracted from the soil.

In experimental fertilizing and especially in the small fruit plant results obtained are often apparently contradictory and must be noted by the operator with all of the local conditions both past and present thoroughly in mind. Hence the danger of the average fruit man to become side tracked on some simple condition quite overlooked and so plunge into a course of procedure entailing loss for many years in consequence.

In the subject of soil building we have a subject but partly understood. It is touched by infinity and only bring results as we incidentally or skillfully hit vital combination highly essential to the best development of the crop in hand.

DISCUSSION.

Mr. Hanchett: I should like to ask if he tried experiments with the raw phosphate rock.

Mr. Cook: Yes, we are very much interested in that subject of raw phosphate rock. It was but a few years ago that I bought a carload of phosphate rock from Tennessee and so we were watching it, not only on the strawberry, but on every other crop that we were growing on the farm. I take it that you all are aware that we need to decompose phosphate rock with either material that we take out of the horse stable manure or the acids of fresh manure in connection with it, in order to make it more available; even if we put it on clover sod we will find it becomes available somewhat, so while we have gotten marked results in the use of raw phosphate, and we are getting a great deal more in the use of rock phosphate than we do in acid phosphate, yet I am sure if we want to get the most we can out of a good rock phosphate for one or two years, the best we can do is to buy acidulous phosphate, because while the acid rock costs about \$15 a ton more, and you can buy the raw rock, in carload lots for something like \$8.00 or less, we must consider the acid rock content—it analyzes 26 per cent phosphoric acid, while the raw rock runs down to about 14.

Mr. Hanchett: Is there not danger of getting the soil acid by using the acid phosphate?

Mr. Cook: If you get some good practical chemists and take the chemical reaction of the acid phosphate, they will tell you that the hue and cry about using acid phosphate is pretty much all wind. I do not think we need have any fears whatever about acid phosphate ever making the land sour.

Mr. Spurbeck: Have you tried wood ashes?

Mr. Cook: Yes, a few years ago, while I was growing fruit in New York State I conducted experiments for three years at Cornell University with various kinds of fertilizers, and that was one of the things that we attempted to determine, to show the value of hardwood ashes in the fruit line and after watching it carefully for three years and using from a few hundred pounds to a ton to an acre, we were never able to perceive any results that we got from ashes on this Cornell sand and clay soil. I want to emphasize that, our soils were mixed, they were largely made up of clay soils and gravels in varying proportions.

Mr. Hanchett: Have you tried any experiments with lime in the soil?

Mr. Cook: We have to some extent. We found where the soil was extremely hard and impervious to anything that came in contact with it, a light application of lime would tend much to loosen the hard soil. We never found the lime any better than acid phosphate. Acid phosphate is largely lime and we get a great deal of lime in that way. Unless we have those conditions that I mentioned, I do not think that lime is really necessary.

Mr. Hey: How do you apply salt?

Mr. Cook: Just as we apply the fertilizer where we have a bed growing like this bed of which I showed the photograph, we go between the rows in that narrow space and just scatter it over the vines.

The President: In New York they are using ground limestone. Have you experimented with that?

Mr. Cook: No, we have not.

Mr. Hager: I want to ask you if you have conducted any experiments, or if anybody would know what fertilizer to use on strawberry beds where you are almost continuously growing strawberries, if there is any commercial fertilizer that would fill in there, or, in other words elements that the strawberry has taken from the ground that the ordinary stable manure will not replace. My area is limited and I have to use the same land for strawberries repeatedly.

Mr. Cook: The strawberries that we grow are pretty much all water, except five per cent, and very little is taken from the soil except nitrogen and phosphoric acid and stable manure ought to replace these. In Michigan we have what I have called for want of a better name the "black root." I know it is over most all the states in the union, and under those conditions I would not under any circumstances go back to the same soil for a number of years and hope to have a clean crop of strawberries. I know it is one of the most fatal things that we can meet in a strawberry field; it is as fatal as the peach yellows is to the peach and it is hard to fight, and the only thing we can do is to get away from it, and you people have been buying plants from other states and I know Michigan has been subject to it for a great many years, and Ohio and Maryland, and I could mention several others and I do not see how it is possible that you have escaped it.

Mr. Hager: I have raised three successive crops in the last six years on the same plot of ground, and I wondered if I could continue to do that?

Mr. Cook: There is one thing to be borne in mind, and that is, in small fruits like in everything else, nothing succeeds like success. If you are successful in raising crops, I congratulate you, but in Michigan, where we go back to the same soil we feel sure of a failure, so if you have scored a success I congratulate you on your success, but I would go ahead with a great deal of caution.

A Member: How is bone meal?

Mr. Cook: We found bone meal in proportion to the amount of phosphoric acid it supplies, costs a great deal more than acid rock and when it comes to results, it really is no more valuable; a certain per cent of phosphate in the acid rock is just as satisfactory and a plant will do just as well as it will on bone meal and the last few years we have not used bone meal at all.

Mr. Kellogg: Has Mr. Cook had any experience with this black root rot on the ground where he grows plants?

Mr. Cook: Indeed, we are up against that proposition. We are growing plants every year and we have had experience with it under all conditions and everywhere, and I find this one thing about the disease, that if in the fall of the year we dig plants to ship to some special customer, or dig to heel in ourselves, to carry them over to set first thing in the spring, when we dig up the plants in the fall they will look pretty good and in the spring they are all rotten with that miserable disease, so all I can say is to be

exceedingly careful and calculate when we come to plotting our blocks, that we do not get this monster on our hands.

Mr. Richardson: You speak of that as a disease—that is my impression, but on what ground do you base that statement that it is a disease, what fact backs that statement, that it is a disease and not weather conditions, as so many claim?

Mr. Cook: Three years ago Prof. Taft of the State Agricultural College held to that point, that it was a condition and not a disease, and that year we had been doing quite a little experimenting with the black rot, and so while it seems to me that perhaps as the gentleman puts the question, that he who affirms must prove, still I think the man that affirms that it is not a disease is the man that must prove it. Let me tell you, it has all the symptoms of a disease, it persists and when it gets into the soil you cannot get rid of it until you rotate that piece of land. When we have a wet year and humid conditions it hurts the plants worse, and it cuts the crop off more. I was able four or five years ago to find one man in the state of Michigan that had perfectly clean roots, he had plants to sell, I got 3,000 Aromas from him, as nice as I could expect, washing every bit of dirt off, I could not find a trace of that black rot; I took those home and put them right by the side of plants that I knew were affected, and in the course of that year the plants I knew were looking all right, as far as my investigation disclosed, made just four times the growth and showed four times the vigor right along that the other plants did, and while they were affected the following fall, yet the roots were in better shape than the others, and next spring, when I came to take them out and set them out in a new bed, very much to my chagrin, the roots were just as much diseased from those plants that came home seemingly well as from those that I knew were badly affected. That forced me to the conclusion that it must be a disease. Until we can locate the germ and until we can work out a life history of it I suppose no one can answer it absolutely, but, as I said, four years ago the Michigan Agricultural College took up the question and a year ago Dr. Herschel told me he thought he had the germ isolated and that they would have a life history to work out soon. Cornell University has been working at it twelve years, and while they admit it is a disease, they do not now know any more about it than they did. I was not surprised a couple of years ago to run across Dr. Herschel—I asked him how that disease was getting along, and he said, "We are thrown off the track,

we do not know anything about it at all." I have told you about as much as I know about it, so I think the safest way for us as strawberry growers is to assume that it is a disease and to assume that it is a very dangerous disease that will strike right at the very foundation of successful strawberry growing and take that method that will help us to steer around it, if possible.

Mr. Richardson: Concerning the question of fertilizer and mulch, how is coarse stable manure for mulch?

Mr. Cook: That is a question that will have to be determined locally, I am sure; it would depend on what the soil contains and how the soil has been treated and how the plants are growing, too. We have used on poorer lands, where we thought there was not enough nitrogen and perhaps not enough vegetable matter, we have used horse manure with plenty of straw and under those conditions we got more berries. On the contrary, if we have soil fitted primarily for a strawberry crop and we have the fertility, as nearly as we can ascertain, I think we make a great mistake to put anything with much manure on a fruiting strawberry bed. In watching the black root, you will have noticed under a heavy mulch this disease is much more active than in an open soil. Digging that ground up thoroughly in the spring for the express purpose of getting the sun into the soil will do away with the continual effects that mulch provides for this *disease*, or this *something* that does us a lot of harm.

Mr. Hanchett: I did not find a strawberry in the region of Benton Harbor that had a bit of mulch, except weeds.

Mr. Cook: For a great many years they have been growing peaches, raspberries and blackberries, and they did not have enough farmers to furnish sufficient mulch, and actually the mulching of strawberries was absolutely out of the question, and if we had just thrown up the strawberry business and not been growing them, it would have been much better, but to think that those fellows fell back on the lazy man's method and gave strawberries a black eye is what I do not like.

GRAPE CULTURE.

EDWIN H. RIEHL, Alton, Ill.

Next to the apple the grape is undoubtedly the most valuable fruit that grows on American soil, and in parts of the country, is regarded as King of all fruits. Surely it is the most accommodating fruit we cultivate, succeeding as it does in every clime and soil, north, east, south and west when varieties are selected to suit the different sections. While the grape is partial to certain soils and other conditions, it is possible to grow it even under adverse conditions in any part of the country.

Bears early and yields more abundantly considering the amount of ground it occupies than any other fruit. Our long list of varieties gives us a greater choice of quality than we have in any other fruit and gives us a longer succession, from early July until after frost; lives longest and is the easiest to propagate. Can be grown to perfection on steep hillsides, where nothing else could be grown profitably.

May be preserved and put to more and more healthful uses than other fruits. Surely, then, we are justified in calling it the most useful and accommodating plant.

Exposure and Soil—Select the most open sunny exposure, preferably sloping slightly to the south or east. Such an exposure has a tendency to guard off mildew and rot to which many of our best varieties are subject.

A deep, loamy, limestone soil, dry and deeply worked is the ideal soil for the cultivated grape. This does not mean where these conditions can not be had, the grapes can not be grown, for, as stated before, by proper selection of varieties it can be grown under the most adverse conditions, though naturally not to the point of perfection, as where conditions are most favorable.

Varieties—Although we have an endless list of varieties that may be grown in the east and middle west with more or less success, I will only mention a few that are most hardy, vigorous, productive and of good quality. The old reliable Concord should, perhaps, have first consideration, for it has been said repeatedly, "when in doubt plant Concord." Worden, a seedling of Concord, is an improvement on the parent in size and quality, and

with a little extra care in the way of pollinating and pruning, it deserves a place in the family garden. Its skin is too thin and tender for a market grape.

Along this line we have the Mc Pike, a seedling of the latter, almost a duplicate of its parent, excepting that it is larger. A very interesting variety, being the largest, and at the same time, the best in quality of any black grape known. Too tender for shipping.

King is a most excellent variety of this class, supposed to be a sport from Concord. Almost as large as Mc Pike, not quite so good in quality, but ripens evenly, and with the skin of the Concord, is a good market sort.

Moore's Early is one of the best early, hardy, large, black grapes.

Eclipse is regarded by all who have tested it to be the best, early, black grape on the market. This variety originated at the writer's home and was introduced two years ago.

Niagara is the best white grape ever introduced, but is a little inclined to be tender, and at the north should be well protected.

Moore's Diamond and Green Mountain would be good white grapes for the north as they are very hardy; both are of fine quality.

Lutie is the best red grape for the north, because of its earliness and extreme hardiness. Very vigorous and a sure bearer.

Woodruff is another good, hardy, red grape. Could mention many other sorts that we grow successfully in Illinois, but as this paper is written chiefly for northern growers, the above list of the hardiest varieties will probably be ample for their needs. It would be a waste of time for any one in the east or central west to attempt the growing of California or foreign varieties or the Scuppernong of the south. They succeed admirably where they belong but are out of place here.

Cultivation—The grape for best results should have good cultivation and liberal feeding. In Illinois we get good results by cultivating two or three times in spring and then sowing cowpeas. The peas, keep down weeds, enrich the soil and serve as a cover crop in winter. In early spring these are plowed under, and if possible an application of good stable manure is given and later plowed under. Frequent stirrings of the soil are continued the rest of the season and the next year cowpeas are used as before.

There are two reasons why the old single stake method is to be preferred to a trellis or arbor. One is, that where ground is not too sloping, it admits of cultivation both ways with a horse, thus saving the slow and tedious work with the hoe, and furthermore the cultivator does better work. The other is, that by the stake system, the amateur is not so liable to injure his vines by leaving too much fruiting wood, thus allowing the vines to overbear.

There is very much less danger of injuring a vine by pruning too severely, than by leaving too much bearing wood. The amateur with trellis or arbor, attempts to cover every slat or wire with dormant wood, thinking that in this way he will get an abundance of both shade and fruit.

The fact is that an arbor can not be made a success if both are expected. Vines should be cut back severely each season and the arbor covered with the new growth, and the less fruit produced the better will be the shade. The trellis is all right for the experienced vineyardist who knows just how much bearing wood should be left on the different varieties he grows, because if put up right it is permanent, and gives space for supporting the young growth. Not all varieties can be pruned alike, each vine must be pruned according to its vigor; and just how to do this properly can only be learned by experience and a careful study of the habits of different varieties. What is called the renewal system, is the best method of pruning most varieties. To describe this briefly each crop is produced on a new cane of the previous year's growth and while this cane is fruiting another is being grown to produce a crop the next season.

Some varieties like Norton's Virginia and Cynthiana do better by allowing the original cane to remain for several years and the fruit produced on laterals sent out from spurs of the main vine.

The stronger shoots produced during the growing season should be tied up frequently as they advance in growth and the weaker ones rubbed off soon after they start.

When the fruit bearing laterals have made three leaves beyond the last bunch, the end of this lateral should be pinched off with thumb and finger. Do not pinch closer than this or like some, allow a longer growth, and then prune with a knife when wood is hard. Remember that foliage means health and vigor to the vine, which is essential if a crop is expected.

Propagation—As mentioned in the first part of this paper the grape is very easy to propagate. Excepting McPike all the varieties mentioned are easily grown from cuttings in the open ground; the latter being a little more difficult to root in this way. There is a class of grapes, to which Norton's Virginia belongs, that is difficult to grow in this way, and must be grown from layers or grafting. There are however, favorable localities and soil where even this hardwood class can be grown successfully from cuttings.

The art of grafting is frequently of much value to the vineyardist. At my home there were at times hundreds of vines in our vineyards that were not profitable, brought about by testing new varieties as they were introduced and planting too largely of some newcomer that was boomed and praised to such an extent that we could not resist planting largely, instead of but a few vines for testing.

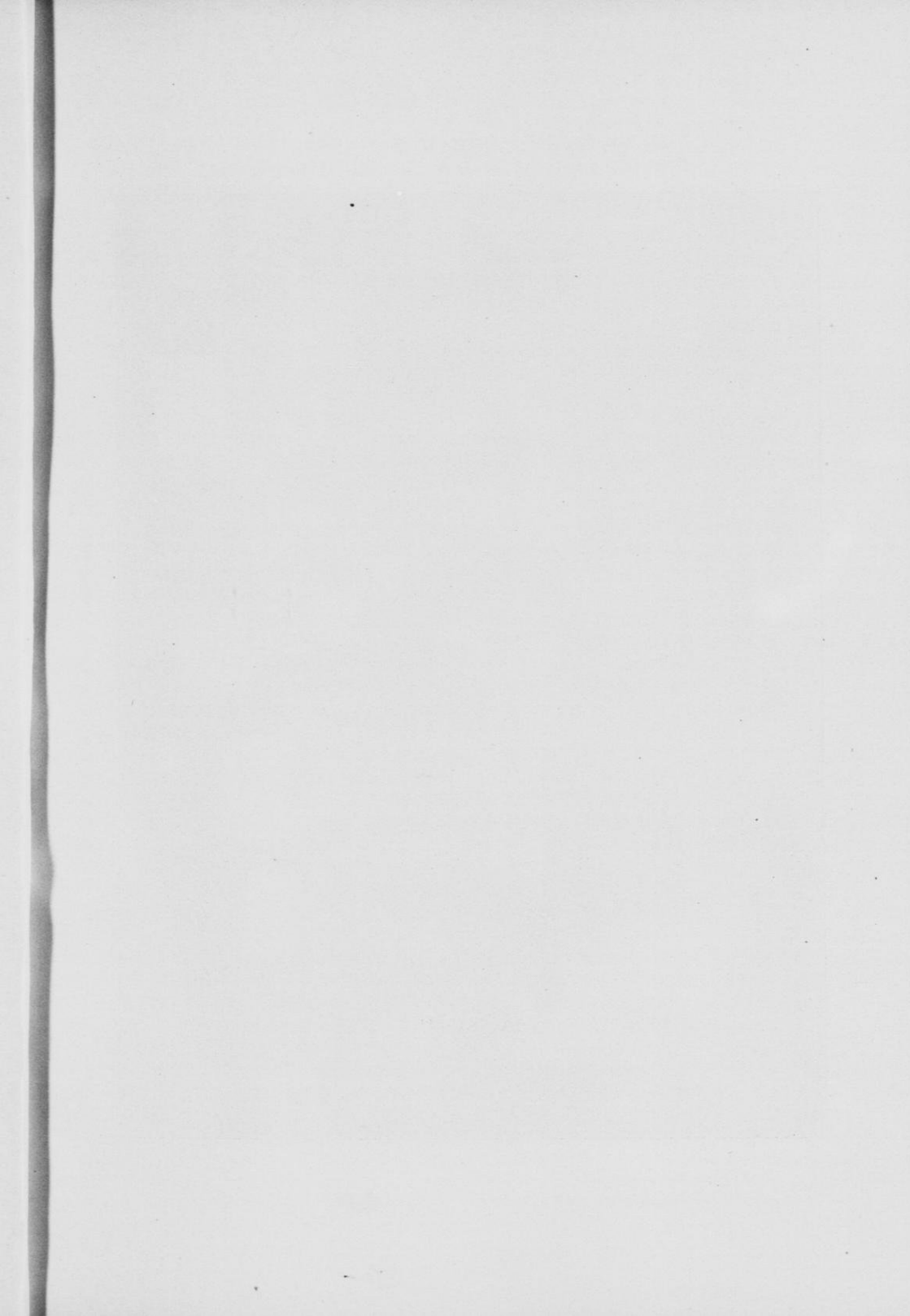
Upon learning that varieties were of little or no value to us, they were promptly changed to other sorts we knew would give us good results. By grafting we take advantage of the strong established root and lose but one year's crop of fruit. It is also a means of getting a good supply of propagating wood quickly of new sorts that we know are of real value.

Insects and other Pests—The grape has several insect pests which however strange to say, are not permanent; for instance the leaf-hopper, which is unknown in our section, has been known to defoliate entirely large vineyards in the southern states, and they only appear there once in several years. As a remedy I would suggest that as soon as noticed, the best bunches be bagged; the rest pulled off and the vines thoroughly sprayed with Paris Green or Arsenate of Lead.

The grape vine flea-beetle is some seasons, very destructive in our vineyards by eating the buds just as they begin to swell in spring. These can only be held in check by hand picking.

Mildew and Anthracnose are diseases of the grape which prey on varieties having weak foliage, such as hybrids with too much foreign blood in them. It is not troublesome to the varieties recommended in this article. These pests are best held in check by close pruning and liberal feeding.

Black Rot is a fungus pest, which in some parts of the country is destructive to the extent of destroying crops entirely. Is



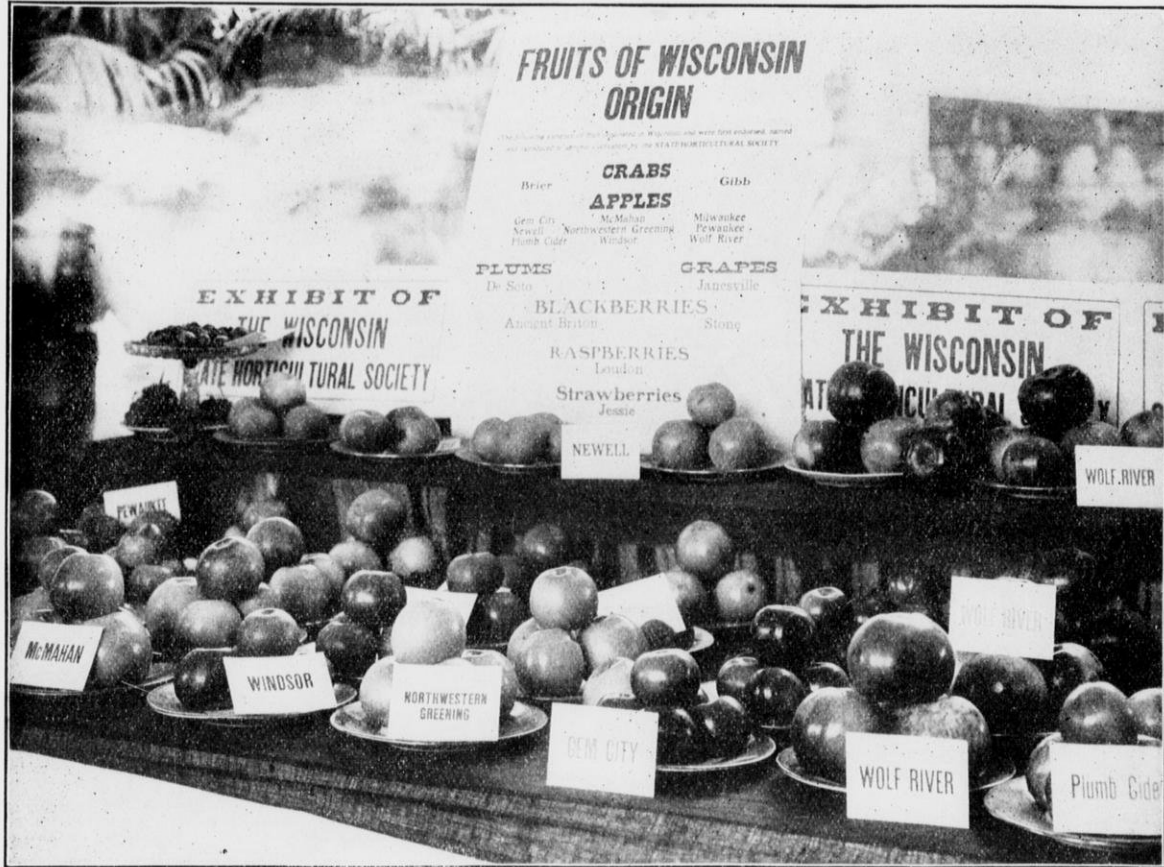


Exhibit of Wisconsin Fruits. State Fair, 1908.

most prevalent in warm, rainy seasons. All but the hard wood varieties are subject to the rot, which, however, is easily prevented by spraying several times during the growing season with Bordeaux mixture.

Birds—Among our many fruit loving birds there are but two that we must deny what they consider their share of the grape crop.

The Oriole, the prettiest bird that flies in our section and a sweet singer is so destructive that one bird in a vineyard of fancy fruit will destroy \$10.00 worth of fruit in one day. Just imagine then the result of 100 of these birds in a small vineyard. This bird, unlike others, does not eat a few berries and go on about the better work of catching insects, but is what might be called a grape-juice sucker. Flies from one vine to another, picks out the fines bunches and punctures enough berries on each bunch he selects to spoil it for market. The only successful way of combatting this pest is to spray piercingly with No. 10 shot.

The despised English Sparrow is very troublesome to small berried varieties. They swallow the whole berries and in a short time will strip vines completely. They seldom molest large berried sorts. Would recommend same treatment as for the Oriole.

Winter Protection—An important point possessed by this fruit is that it is the easiest of all to protect in winter, which makes it of special value at the north where many other fruits can not be grown.

About the time severe winter is expected the vines should be pruned, bent to the ground and securely covered with earth. In early spring uncover and tie neatly to their support.

Bagging the Grape—Those having but a few vines or a small vineyard, will find bagging the best means of preserving and protecting the fruit on the vine. This is done by slipping strong paper bags over the good bunches and securing them with small twine, wire or pins. Small bunches should be pulled off. Nimble fingers can do this work rapidly and it secures the fruit from rot and birds and preserves that rich bloom on the berries which is very effective when grapes are to be used for exhibition or fancy market.

Gathering and Marketing—We like the plan of packing right

from the vine with but one handling and that, where possible, only by the stem. This to be sure is for fancy fruit and we should strive to have our crop represent as large a per cent of that grade as possible. There is no danger of our markets ever becoming overstocked with strictly fancy fruit yet right here is another point in favor of the grape; no matter in what condition the market may be, there is always a place for the lower grades, which, in the case of other fruits, would be a loss.

The small and loose clusters may be easily turned into first class products in the form of Jelly, Jam, Grape-Juice, Wine, etc. Nothing in the way of dried fruits is quite so wholesome and valuable as the raisin.

We pack much of our best fruit in the till or tomato baskets, four of these to a crate. The climax basket is also used extensively. It is needless to say much more about packing, than to refer to the advisability of having the quality uniform from top to bottom of package.

It is also a good plan to put a neat label on each package, bearing the grower's name, and have one reliable dealer to handle your entire crop. In this way we may quickly gain a reputation that other growers will envy.

The grape ranks high as a market fruit. Millions of dollars worth of the fruit is turned into wine alone, annually. Some will say "What a pity to put this luscious fruit into a despised fermented form." To this I will answer, if people must and will have it, why not give it to them in this most pure, healthy, wholesome form, thereby displacing much of the vile, poisonous stuff that would otherwise be used in its stead.

The apple may justly hold the honor as King of all fruit, but surely the grape has no peer when it comes to a fruit for the masses.

DISCUSSION.

Mr. Toole: I thought I heard you speak of the Worden, "if carefully pruned and pollenized," is that what you said?

Mr. Riehl: You refer to the fact that the Worden does not pollenize perfectly?

Mr. Toole: That is what I thought you would have us in-

fer. Do you plant some other variety near by, or do you artificially pollenize?

Mr. Riehl: When you have a variety like that, it is well to plant it in a mixed vineyard, having several other varieties near by. The Worden has that fault of not pollenizing perfectly always. Some seasons it does right well even by itself, other seasons it does not. That may be accounted for perhaps that some seasons the insects and bees can fly during blooming time and other years it may be cloudy and cold, so that insects and bees do not get around to do the pollenizing for us.

Mr. Sperbeck: Did you mention the Delaware?

Mr. Riehl: Yes, as I stated before, there are a number of varieties down there that we would be safe in planting, but that perhaps would be a little tender here. The Delaware, for instance, is a splendid grape when it succeeds, but it is not generally reliable in large sections. It is a little weak in foliage. It is all right for the expert vineyardist who studies its requirements and prunes it back severely and gives it plenty of food. The same is true of the Catawba. The old Catawba was introduced before 1866; also the Isabella, they are still good too.

Mr. Spurbeck: Do you grow the Rogers' 15?

Mr. Riehl: We have tried all the Rogers, some of them are most excellent. All are fine black grapes and you could scarcely wish anything better in the hands of the expert, but it would not do to recommend them to the amateur, because they must be watched closely and pruned closely.

CURRANTS AND GOOSEBERRIES.

E. E. DUNNING, Milwaukee.

There are two kinds of Horticulturists, one makes his money on the farm, and spends it in the city, the other earns his money in the city and spends it in the country. We come under the head of the latter and with this understanding you will not expect to hear much you do not know.

We are just like a sponge ready to be squeezed of what knowledge we have absorbed in order to take up a greater

knowledge from others here with more experience. It was only with this thought that I consented to present this paper giving mostly our short history of small fruit culture in Milwaukee County, especially currants and gooseberries.

We have noticed that the papers and discussions of this society for the past few years have been almost entirely confined to strawberries in way of small fruit and apples for tree fruit and have asked ourselves why more was not brought out regarding raspberries, blackberries, currants and gooseberries, and also cherries as our experience thus far teach us that these fruits are a feasible Wisconsin product and quite as profitable in a series of years as the strawberry and apple provided you have the facilities for heavy mulching and getting pickers in sufficient numbers at the proper time to harvest the crop.

The currant and gooseberry is something that will not freeze out in our coldest winters, which is not absolutely certain with other fruit, although we have raised Eldorado blackberries for the past five years without the loss of a bush.

You are certain to raise practically every bush you plant and once started they continue to bear from year to year with proper cultivation, mulching, etc.

We have been told by at least three neighboring farmers that they plowed up their currants on account of the currant worm. Any one who would do this provided he knew how easy it was to get rid of them would allow grass and weeds to choke out his strawberries, and his apple trees to become almost useless for want of spraying, pruning, etc., and in the business world would soon have the sheriff's signature on his door.

We take it that each member of this society understands that there is no great success in any branch of Horticulture except along the lines of constant work and attention during the season, doing the right thing at the right time. With the currant and gooseberry it is this and nothing more. So far we must say we see no discouragements in growing this fruit in Wisconsin commercially in proper locations, especially tributary to our larger cities; whatever losses we have met with have been lack of knowledge and not of opportunity and such mistakes simply pave the way to ultimate success.

Now regarding our experience, I say "Our" as I am in business in the city and my partner, Mrs. Dunning, is the real overseer of the little fruit farm and greenhouse.

Five years ago last spring we planted about 50 each of apple, plum, pear and cherry trees, 500 Loudon raspberry and 500 Eldorado blackberry bushes and the following spring 7,000 strawberry plants. We mention these in order to show you that we have had experience with these fruits, and with the exception of increasing the cherry trees up to 400 and the Eldorado blackberries to about 2 acres, our increase has and will be the currant, the strongest possible evidence of our faith in them.

Four years ago last spring we planted 500 Fay currant and 500 Downing gooseberry bushes, the following spring, that is to say three years ago last spring, we planted 500 more Fay currant and 500 more Downing gooseberry bushes, in July of that year we marketed about \$70.00 worth of fruit from the original 1,000 little currant and gooseberry bushes, from less than $\frac{1}{2}$ an acre of ground. Two years ago we planted 2,000 more Fay and 100 Pomona currant bushes. The two previous years planting yielded about the same comparatively as the year before.

One year ago last spring we did not plant currants or gooseberries but we increased our Eldorado blackberry patch materially.

In July of that year the 500 original Downing gooseberry bushes yielded just an even \$130.00 from less than $\frac{1}{4}$ of an acre of ground. The 500 original Fay currant bushes only about \$70.00. Right here we find a characteristic of the Fay currant. The year before this I succeeded in getting a man on the place who could not find time and energy to draw fertilizer from the city as we had done previously and since, and that explains the comparatively small yield of the Fays, the next year they were mulched heavily and last July the yield was enormous. I am sorry to say a misjudgment on my part makes it impossible to tell what the yield would have been in quantity of fruitage or money returns, all 3,000 Fay currant bushes were equally heavily loaded compared to age and size, it did not seem possible to get many more clusters on the wood than grew there. I did not realize what we had, and started to pick one wagon load of crates a day and was leaving the older and larger bushes for the last, they over-ripened and one extremely hot day came just at this time and literally cooked them on the bushes, in this way we lost many bushels, but a 16 quart crate from two of the older

bushes was not at all unusual. The gooseberries got cooked in the same way.

We would advise, however, to go slow on the Fay currant, our land is heavy clay loam and we use at least 25 loads of mulching to the acre every year. It is our opinion that on lighter soil or with less fertilizing they would not prove profitable. While this last year the 100 Pomona bushes did not yield any more than 100 average Fays of the same age, they show more vigorous growth of wood and were also heavily loaded and we think would prove far more certain in a series of years or under less favorable circumstances. Last spring we planted 1,300 more Pomona and 2,000 Red Cross currant bushes and have arranged for 1,000 more of each of these two varieties for this next spring. This will give us over 8,000 currant bushes in all. Our Red Cross show vigorous growth and we expect greater results from those.

We spray the currants and gooseberries at least once a year with Bordeaux as the leaves open, and just as soon as the worms appear, with Hellebore, if they get thick before noticed would try Paris green, 1 pound to 200 gallons of water, but would hesitate to use this too close to picking. We should watch close for the worms and not let them get the start of us, we find they generally come after a heavy rain. We keep the bushes cultivated and as free from grass or weeds as possible, pruned and mulched as above mentioned. If there is more to do we know not what.

We bought our little farm and have put money into it to mature the fruit and greenhouse in order to provide against any possible reverses in business and we think so far as the future in this world is concerned we can say we know in what we have trusted and it will be able to keep us against that day.

DISCUSSION.

Mr. Hey: Have you ever tried the Perfection currant?

Mr. Dunning: I am not able to inform you very generally in regard to those things. I have practically given you all my experience in the paper. I have investigated the Perfection, I have not tried it personally, but I have investigated it somewhat and I believe it is a splendid currant. It may possibly be the best currant that is grown, but of course it is somewhat new yet and I think that one trouble is that where the currant is so very large, that it is not apt to yield as heavily per acre. We raise the Fay,

our rows are six feet apart, yet the bushes actually came together in the middle, but I have never seen anybody's else do it. Our land is enormously rich. I raised corn on this same land before planting to currants that made stalks which were simply wonderful, then put twenty-five loads, big, heavy loads, of manure from the city for each acre and we are going to have pretty good results. I do not think anything short of that will do for a Fay currant; I would not advise anybody to plant that currant.

Mr. M. S. Kellogg: Do you get a growth of the Fay bush that holds the fruit out of the mud?

Mr. Dunning: No, the Fay is a rather slender bush; the tendency is to bend over, the tendency is to grow down and where they are heavily loaded, as ours were this year, they do not hold up the fruit. Of course the fruit is not all on the ground, but much of it.

Mr. Geo. J. Kellogg: Our friend Stickney of Wauwatosa was heavily in the currant business. After planting several thousand Fays he dug them all up, discarded them entirely, and planted other varieties, because of this low spreading tendency.

Mr. Riehl: In regard to the Perfection currant, we have tested it thoroughly in the Stations down there and, I would say that seems to be well named, as it would indicate the finest currant that could possibly be imagined, in size of berry, size of bunch, productiveness, upright growth, vigor and in every respect we have never yet been able to find a single thing in which it could be improved.

Mr. M. S. Kellogg: Has it yielded as heavily as the Pomona?

Mr. Riehl: Yes, it could not yie'd heavier. The berries covered so heavily that you could not see the wood growth and yet strong enough to ripen up the fruit perfectly. Mildew is one thing that we must seriously consider in growing gooseberries. We must not attempt any of those foreign varieties, because the mildew will get them every time. We must resort to such varieties as the Downing, Pearl and those that are freest from that pest.

Mr. Dunning: I should like to ask one question. As I told you, we had not grown any of those Red Cross, except the ones we planted this spring. What I came here for is to get a little more information, if possible. Is there anybody here that has grown Red Cross currant bushes, say five years with the Pomona and the Fay? I do not care so much about the Fay, because I am

satisfied a person would have to live very near a city, where they could get all they could possibly want of the food they like. What I want to get is the comparative value between the Pomona and the Red Cross?

Mr. Spurbeck: The Red Cross with us is doing nicely. We think very much of it, and, as has been said here about the Fay, it will not stand up, it lies in the dirt too much.

Mr. Riehl: The Red Cross has a little of that tendency to droop as does the Fay, but not so much. In that way it is an improvement, and it approaches the Fay very closely in size and is also the same sweet quality.

Mr. M. S. Ke'logg: We have grown the Red Cross for a few seasons, not sufficiently to determine exactly its market value, but with us we have been led to rely more on the Pomona and Wilder than we have on these newer kinds.

Mr. Melcher: I have grown Red Cross currants in a small way for ten years, and have grown it alongside the Pomona; we think more of it than of the Pomona, both as to quality and productiveness.

EVENING SESSION.—TUESDAY, JANUARY 12.

FARM BETTERMENT FOR THE WISCONSIN FARMER.

DANIEL D. CLARKE, Cambridge, Mass.

At the present time there is a widespread movement for a betterment of the conditions of life in all its aspects. All sections of the country, as well as all classes of its citizens, are represented in this hopeful struggle for more wholesome conditions of life and more attractive surroundings. Cities are endeavoring to provide parks, pleasure grounds and recreation areas for the present, and to ensure them for the future. Towns and villages are considering the better ordering of their streets, the treatment of open public spaces, and the providing of playgrounds. Countless individuals in all stations of life are zealous in their

endeavors to so adjust their grounds and buildings that they may serve their real ends in as attractive a manner as possible. They not only arrange and plant, but they are untiring in their efforts to maintain and to preserve. In this class the farmer has many representatives. Sometimes he is particularly successful. Yet most frequently he fails to secure much of the pleasure which is to be derived from country life. Is this not a pity? For who is more deserving than the farmer? He ought to share bounteously in all the things of life that are worth while. In his surroundings there is an absence of many of the limitations and hindrances which beset the dweller in the city, or even in the village. The natural beauty of land, sky and vegetation are about him. He is free from the vexing sounds, unsightly scenes and limited spaces which are a part of the present city life. His own acres are many, and often his neighbor's lands contribute quite as much to his pleasure as do his own. Ought not the farmer to be very thankful for the many natural advantages which may be made to contribute so generously to his joy and to that of his household?

Yet why concern ourselves with this matter of farm betterment? Why disturb the placid, sluggish, unresponsive tenor of our ways? What is the value of such improvements? Our surroundings will be more wholesome and sanitary. There will be greater convenience. Conditions of work will be more comfortable. There will be a real increase in the valuation of the farm. Then is there not a distinct joy in beautiful surroundings? Every successful attempt to make the country home more attractive, makes happier the lives of those who dwell within. Our natures respond to harmonious scenes. Manifest order and beauty delight the eye. Disorder and ugliness displease the eye, dwarf the nature of the individual and contribute to a grossness of life. On the other hand, beautiful surroundings tend to uplift life. They help their creators and observers to live more useful, happier and nobler lives. Then there is a value in setting a good example of right doing. Many a man by the proper ordering of his own grounds has done much to arouse and regenerate whole communities.

What are the means by which we as farmers can make our surroundings more pleasant? First we must free ourselves from the error that this pleasure depends solely upon the planting of trees and shrubs about our buildings and on our grounds. Al-

though judicious planting is essential and does contribute very largely to beauty, there are other factors more fundamental. If we are so fortunate as to be in the act of planning our farm, we will want to consider the kind of buildings best adapted to our particular purposes, the best sites for them, and their proper grouping; the location of the house and the orientation of its various parts; the disposition of the different divisions of the grounds and finally the connection of our buildings with one another and with the highway by drives and walks. When we have carefully thought out all of these problems it is time for us to discover where we shall plant our trees and shrubs and what shall be their character.

SELECTION OF SITES.

What are the principles that should govern us in the selection of our sites? There are the questions relating to health, to convenience, and to attractiveness. Health may be ill-affected by a contaminated supply of water, by the existence of unsanitary conditions, by a natural dampness of the site, and, to some extent, by a lack of protection from the elements. Therefore, to ensure good health our water supply should be reasonably secure from sources of contamination. It should not receive the surface flow from the barnyard nor seepage from place of sewage disposal. The area itself should be somewhat elevated and its drainage should be good. While advantage should be taken of natural shelter whether of land formation or of vegetation.

For convenience there should be first of all a near and abundant supply of water. Then the spot should be easily reached. There should be no obstacles requiring a devious way of approach, either from the highway or from the fields. Nor should the grades be uncomfortably steep. To save energy and time the farm buildings should be most convenient to the areas under cultivation. However, this location is not necessarily the center of the whole area, but the center of gravity as it were of the present and future farming operations. In general it is well to be near the most important highway. For not only is the maintenance of an unnecessary length of private way an unwarranted expense, but there is a corresponding loss of time and energy.

For attractiveness it is desirable to secure shelter from prevailing winds and storms. If there are no natural features adapted

to our purpose, we can at least do our best to select a site where some degree of artificial protection may be provided with the greatest advantage. Then it is desirable to enjoy as much sunlight as possible throughout the year. Even in the heat of summer it is very welcome for a part of the day at least. Another factor immediately involved in our happiness is the character of our views. We may not be able to secure noble views, yet we can always strive to avoid unsightly scenes. As to beauty, it is our obligation to select as attractive a spot as possible, or, in the absence of such a natural feature, to choose such a one as we can best make beautiful.

After we have selected our general site we will want to insure the advantages to be derived from the good grouping of the farm buildings. They should be grouped. There should be a logical relationship between them. Thus there will be greater compactness with a marked increase in the sum of convenience. There will be economy of construction, better protection and greater attractiveness. Not only will the structures themselves be better but they will enclose and provide for the concealment of unsightly features. Coming to the most important member of this group, the farm house, we cannot urge too earnestly the necessity for its cooperate planning with the home grounds, for there is a vital relationship existing between these two. The arrangement of the rooms is influenced by the possibilities of the grounds while in turn the arrangement of the grounds is influenced by the disposition of the rooms. The principal aspect of the house should be as nearly as possible south. In the ideal case the living room would be on the south, so that it might secure a maximum amount of light and sun. The dining room would be on the east so as to receive the early morning sunlight. The kitchen should be so placed as to have one side on the east, to share as much as possible of the morning light, while the library or den would be on the west as requiring but little early light. Likewise the hall would be entered from the west. However, it may be necessary to depart from this ideal, it should be the object to place the living room where it gets the sun's early warmth and a pleasant outlook over the home grounds.

Taken together we may make three divisions of the house and its grounds,—the service, the entrance, and the living. The service portion of the grounds which includes the service walk and drives and the clothes yard, ought to have convenient relationship

with the kitchen. They should also be completely screened from the living grounds and from the living portions of the house. The approach on the farm is usually simple. It should never intrude upon the family life; neither should the entrance drive or walks cut up the lawn of the living grounds. The entrance itself should be attractive and hospitable. The living grounds should surround at least two sides of the house. It should be so placed as to attain the best relationship to the points of the compass, to procure the best breezes and to include the best views. The lawns should be agreeably situated with regard to the living portion of the house. So should the flower gardens and borders be pleasantly related. The living grounds should be screened from the service, and from the approach and street and from all outside. There ought to be the feeling of privacy, security and comfort.

On our farms walks and drives are necessary to connect the buildings with one another, with the highway, and with the farm lands. It is essential that they should be included in the comprehensive farm plan. They should be studied in relation to the sites and to the grounds. If they are located independently unfortunate results may follow. For instance, the plot best adapted to the location of the house might not be accessible on easy grades, or there might be intervening obstacles. Then the house might be so placed that the drive must of necessity cut through the living lawn not only destroying the unity of the composition, but interfering with the privacy of the grounds. What are the requisites of good walks and drives? First of all the location should be logical. They are for use. They should be placed where they are needed. They should be direct. They should have no unnecessary meanderings or meaningless curves. In the main they should follow the topography. The grades should be easy and comfortable. For the approach drive it is best not to have the rise greater than five feet in a distance of one hundred feet, and it is well if the rise is not greater than two or three feet. With entrance walk the grade may be heavier, though in this case the rise should never be so steep as to cause discomfort. With regard to alignment, there are many determining factors. If the grounds are small and the land almost flat it is usually best to have straight walks and drives. For in such cases straight lines are most economical of space, most agreeable to use, and most satisfying to the eye. On larger places where the house is situ-

ated at some little distance from the road and the ground is more or less irregular, curving drives are usually best. Yet here there must be some reason for a curve. This justification may be a matter of grades, a projecting ledge or hillock, the necessity for preserving the integrity of the living lawn, but never a mere flower bed or a group of shrubs. There must be a real obstacle to onward progress. The curve itself should always be free, flowing and graceful. In all this matter the topography should be our guide. We should follow it, adjusting our lines so that they may be as graceful as possible while conforming to the facts of grades. Never should a walk or drive exist that is not really needed. Nor should the length and width be greater than utility requires. For a walk or a drive which has an unnecessary length or width exacts a waste of time and energy in passage and requires an uncalled for expense in construction and maintenance. With regard to construction, local conditions play a considerable part. If there is good native road material at hand it is desirable to use it. For it will usually be most economical as well as most harmonious with our grounds. There should be a compact mass, good drainage, and a uniform surface. Then there should be careful maintenance. The surface should be free from stones, the ruts should be filled and good drainage maintained. The line of demarcation between grass and gravel should be sharp. Grass and weeds should be kept out of the gravel itself. These definite edges and grass free surfaces do more to give snap and distinction to the grounds than almost any feature.

Now it is time for us to discover where we shall plant our trees and shrubs and what shall be their character. For successful results planting must always be done with a definite object in view. If there is no reason for it then it should not be done. The principal purposes of planting are as follows: to secure protection from sun, wind and storm; to screen unsightly features; to unite a building with its site; to enframe the lawn or grounds; and finally to secure the fulfillment of those pleasures which plants so abundantly bestow. This matter of protection is pretty well understood. There are formal rows of trees, tall hedges or irregular masses of trees and shrubs to shield from wind and storm. The house should have some shelter from the sun's rays in summer. The trees should not be too close to the house nor should the shade be too dense. Nor should they be so planted

as to shut out an undue amount of the sun's warmth and cheer or to hide pleasant views.

The concealing of objectionable features by means of planting is not so well understood nor so commonly practiced. In spite of our very best efforts, irritating or ugly scenes sometimes persist. Even if we have been successful in obliterating our own we may still have with us those of our neighbors. Our own ill-kept back yard with its clothes lines, its ash barrels, its swill tubs, our barnyard, at best temporarily, if not permanently in somewhat disorder, obtruding piggeries or henyards, the unsightly grounds of our neighbors, these are the objects that we should blot out from our view with planting.

For the most perfect marriage of the house with its site the building should have the appearance of being out of place anywhere else in the world. Most certainly should this union be taken into consideration when the site is selected and the house designed. Even when the very best is done in this respect a more complete harmony may always be effected by planting of some character. There may be a background of trees, there may be shrubs massed against the foundation, or there may be vines growing on the very house itself. At times one of these expedients will suffice, at another time all may be used with propriety to produce that harmony between the ground and the house which is so desirable of attainment.

Then the lawns or grounds should be enframed. This character of planting gives unity to the scene, enclosing it in much the way that an appropriate frame does a good picture. Then it secures a certain privacy and seclusion and gives the feeling of security and repose. Thus the value of the enframing planting is very real and very great.

Then plants may be used for the intrinsic pleasure which they afford. There is a charm of form, of texture and of color. Yet we must not permit these more obvious appeals to interfere with the realization of that greater, higher and more fundamental pleasure of good composition. There is a pleasure to be derived from the fitting arrangement of plants.

This logically leads to an examination of the principles governing good planting. These may be assembled under the heads of simplicity, breadth and harmony. As to simplicity, it ought to characterize our attempts. When we have determined our needs we must meet them in as straightforward a manner as possible.

Keep in view the fitness of the attempt. Avoid over-elaborateness. Likewise observe simplicity in the number of plants used. Do not crowd. Beware of an over use, particularly of trees and shrubs. Then choose comparatively few varieties.

As for breadth, what is it? It may be said to be the making of one feature principal and the keeping of subordinate features from obscuring or belittling it. The meaning may be clear when viewed in relation to some definite feature, as the lawn. This is the foreground of our scene and should be principal. It should have a fringe of shrubs or of trees and shrubs about its borders. Never should it be spotted with flower beds or cluttered and crowded with individual shrubs or groups of shrubs. Furthermore, if breadth is to be secured, this fringe of shrubs must be composed essentially of masses, not of single plants or of groups of two or three.

Harmony should prevail throughout. The plants used on our grounds should be in perfect accord with our native vegetation. In fact it is well to let our own trees and shrubs form the framework of our plantation. To these we may add such worthy exotic plants as please us with the charm of their form, of their flowers, or of their fruit. Likewise there should be harmony between the trees and shrubs and their surroundings. They should not be too small nor too large. For instance the shrubs marking the foundation should not be so tall as to dwarf the house. This size-harmony should exist between the plants themselves. Usually a tall shrub and a low shrub should not be placed side by side. In the mass there should be a gradual graduation in height. There should be a nice transition from the grass to the tallest shrubs. Likewise harmony should prevail in the texture of the foliage. There should be a careful transition between shrubs with diverse textures of foliage. Then, particularly in the case of vines, there should be harmony between the foliage and the house or other structure, to which it is related. It should not be too large and coarse nor should it be in discord with the material of the building. Then the foliage of our trees and shrubs should harmonize in color as well as in texture. For our safety let us shun shrubs with so-called golden foliage and with variegated or blotched leaves, and use only sparingly and then with discretion trees or shrubs with reddish coloring.

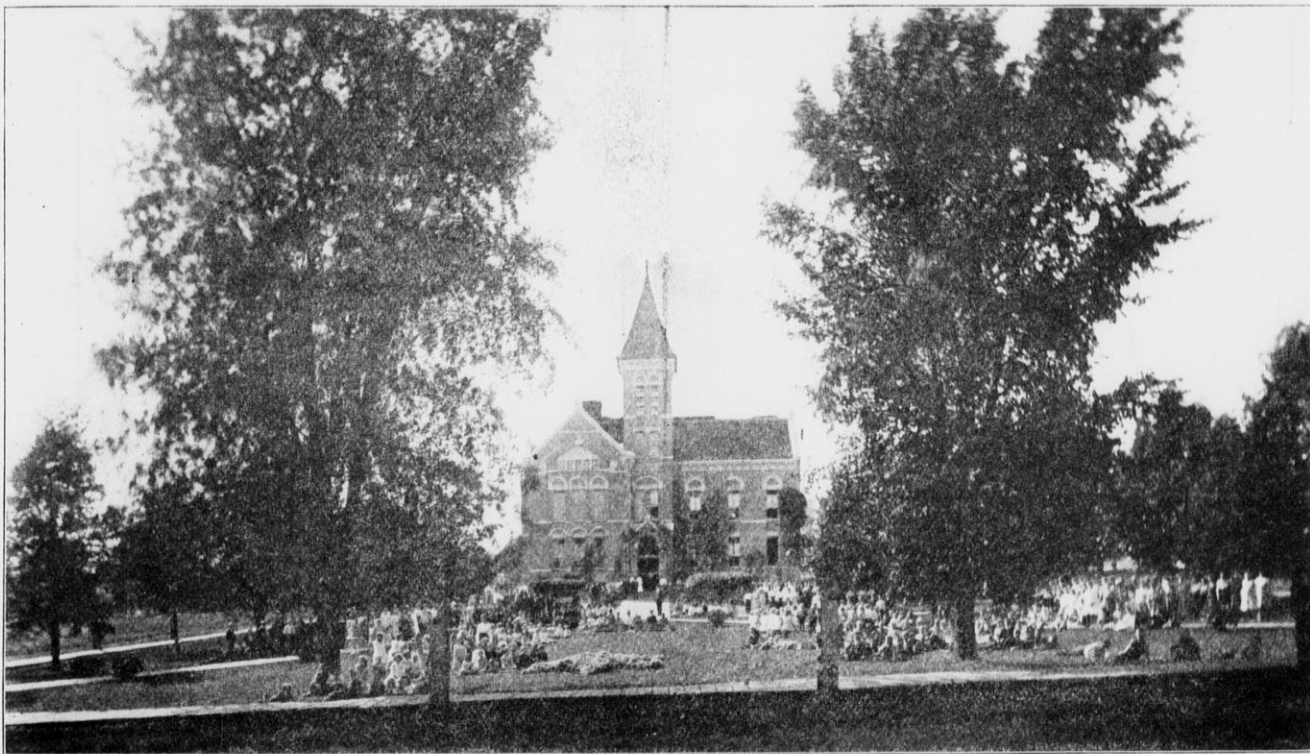
Now that we have seen what we ought to do let us renew our determination to better our surroundings, for what greater influ-

ence can affect our lives than their character? If our surroundings be mean, so will our lives be mean. If they be sweet and beautiful, our lives will mirror their very goodness. Nor is this matter of influence mere speculation. Everywhere examples of evil and of good attest its truth. Great men of all times have proclaimed its power. If we have not already done so, let us take this season to study our problems, to determine our needs, and to formulate our scheme. It does not matter if it cannot be carried out at once or in its completeness. The real need is for a carefully thought-out and a fully preconceived plan. With us farmers it is to be expected that its execution will be gradual. Our incomes are neither constant nor large. There are other things to be done. There are unexpected items of expense to be met. Nor is this on the whole a disadvantage. This gradual and healthy working out of a scheme makes possible the avoidance of certain mistakes, permits of nicer adjustments, affords greater pleasure, and arouses a livelier interest. Thus we must say to ourselves what we would do to arrange our grounds and buildings to secure the greatest degree of comfort, contentment and joy, take on an abundant measure of courage, and do what we have to do steadfastly to the end. Yet we cannot stop here; for the most complete measure of farm betterment there must be an improvement in certain vital elements of rural life. There must be a corresponding betterment of our schools, of our churches, of our highways and of our villages.

IMPROVEMENT OF SCHOOL GROUNDS.

PROF. J. W. LIVINGSTON, Platteville Normal School.

That the school grounds should be made the most attractive place possible has long been incorporated as one of the essential articles of my pedagogical creed. To every man that asketh a reason for this faith that is in me I gladly give answer. Man's taste and character are in part fashioned by his surroundings. The better tendencies of head and heart draw new life from environments marked by purity, taste and refinement. Beautiful surroundings render the school itself more attractive and serve as a silent reminder, that the schoolroom should be kept neat



Grounds of Dodgeville high school. Evidently there are no "Keep-off-the-Grass" signs here.



and attractive. To enlist the aid of boys and girls in improving and ornamenting the school-grounds means to cultivate *esprit de corps* which makes them more loyal to the school and its interests. The joy coming from helping make things go in their little republic, will lead to future loyalty in the broader citizenship of community, state, and nation. To the children whose parents have neither time nor means to provide their homes with things of beauty, an attractive school-yard becomes a joy forever, and no matter how humble the home, it gladly greets every effort to cheer and brighten the life of the children. A beautiful school-yard in a village or town means improved home yards and better kept lawns; and such a yard always means added interest and readier aid on the part of the patrons.

Many years of patient, persistent effort to improve school-grounds have produced some results and some experience that may prove suggestive. I am sure you will pardon the personal reference in bringing before you for practical illustration the story of two particular school-grounds. I take them simply because they are the ones best known to me and the ones for whose improvement I gladly lent a helping hand. The loyal work of the young people in Dodgeville made their school-grounds the pride of the town. Many an enjoyable trip was taken to the woods to find there hardy trees of attractive form, to take them up with care, and then to set them again in the earth where they would give delight to troops of happy children. The favorites of all were the elm, the hard maple, and the linden, for each has naturally a handsome form as well as beautiful foliage. Hedges of arbor vitae were planted to screen the backyard. A good lawn was secured, and each spring a thin coating of land plaster and ashes many times repaid its cost by the increased richness of coloring and rapidity of growth quickly seen in the velvety carpet. Clematis, climbing rose, and Virginia creeper planted around the building gave to the bare walls the grace and comeliness of their green drapery. Bright flower beds with vases and rustic baskets gave added color and beauty to the scene.

In Sparta the outlook for an attractive yard was rather discouraging. The high school was situated on a knoll of sand that was bare and uninviting. However, there were some handsome elms and oaks; and the natural slope from the building was

well suited for a lawn—if the grass could only be coaxed to grow.

The matter was quietly agitated among the boys and girls, and they were soon enthusiastically in favor of improving the grounds. The boys of the graduating class took a twenty-five dollar job and turned the proceeds into the decorating fund. Pupils and teachers soon gave all the money needed. A citizen who was excavating a large cellar donated fifty loads of loam. Sand holes were filled; the grade in front of the building was improved; a large surface was neatly sodded. The rest of the yard was treated to a liberal coating of a good fertilizer, and the grass seed was sown and raked in with care. Several large iron vases were purchased and some rustic baskets made. Basket and bedding plants were secured from the greenhouses. On Saturday there were plenty of willing hands to sift the soil, to help make flower beds; to set up rustic baskets; to rake up and wheel away any refuse rubbish; to dig up plantains and dandelions. Soon the yard presented an improved appearance and attracted the attention of passersby. The chronic croaker leaned on the fence long enough to watch the work and to encourage with the assurance that the plants would soon be stolen or destroyed, that our labor would be wasted, and that the bare sand-bank would again come to the surface. The croaker's words were soon forgotten in the enjoyment of the smoothly shaven lawn, neatly trimmed trees, handsome flower mounds, and graceful vase or basket.

The following summer the students decided to work for an artesian well on the grounds. Fifty dollars were earned as a nucleus toward sinking the well, but the district meeting gave us money to secure a good flowing well, and our money added a neat fountain and a couple of drinking places. Each year brought some new feature to improve the yard. One of the things most interesting to the little people was a rustic bird house. This became the summer home of bluebirds and martins, to which they received cordial welcome every spring.

Later came the plans for a new high school. While the handsome new building was going up, fire destroyed the old home. This necessitated another new building. In the subsequent excavating and regrading not a square foot of our sod was left. The sand was again at the top and matters looked rather hopeless at first, but the clear grit of the young Spartans conquered

again the great sand bank and transformed it into a smooth lawn dotted here and there with clumps of shrubbery, bright flower bed or attractive vase.

Two hundred fifty loads of good soil were soon dumped outside our borders. Companies were formed to provide wheelbarrows, carts, shovels, spades and rakes. A merry crowd of more than two hundred were soon at work wheeling in the soil, leveling the surface, breaking lumps, carting away debris, or smoothly raking the added soil. Students and teachers kept at the task night after night until the entire yard was neat and trim. Then men were hired to sod the boulevard outside the walks. Grass seed was secured and sown. Shrubs and young trees were purchased and several Saturdays were celebrated as Arbor days. Next a tight high board fence was built to cut off the back yard, and immediately in front of this fence were planted vines and a long border of perennials to form an attractive background. The city fathers by request donated us city water to keep our grass and plants well watered during the hot summer months.

Some new rustic baskets were made and additional iron vases purchased. The fountain was repainted and reset. Beds of choice pansies graced the sheltered nooks. A fernery and a garden of wild flowers were started. Beds of brilliant verbenas and geraniums brightened the lawn, and the well filled vases and baskets added grace and beauty. Every student gave his mite to help on the good work and most of them gave muscle too. So each child became a loyal protector of that in which he had invested some capital and labor.

"But all this costs labor, time and money." Yes, *all* these, but the investment pays large dividends. To note the educative influence on the children, to observe the effect on the home yards, to find that the very roughest boy will carefully protect the flowers from injury, to see how proud the patrons become of "our school yard;" to enjoy the wondering surprise of the stranger when told that no plant is ever maliciously injured or stolen, to realize that such a yard may prove an effective object lesson to some fellow workers—these are some of the returns.

The frame surrounding a picture should harmonize with and enhance the beauty of the picture itself. A setting of pure gold seems none too good for a painting of great merit. On the other hand, to place around an inferior picture a pretentious

frame means poor taste on the part of its owner. Such a misfit emphasizes the defects and the gaudy frame brings out in strong contrast the poverty of the picture. So while I appeal tonight for improvement of school grounds my dominant note must be a call for improvement of the schools themselves.

A few years ago it was my privilege to spend one week with each superintendent of fifteen different counties of the state, to visit the country schools by day and to speak to the people each night on the betterment of their schools. Let me give you a bird's-eye view of the conditions that surround the country schools of Wisconsin.

In some northern counties we travel all day long through the great silent forest to find the lowly log cabin where a handful of children gather from the hardwood clearing wherein their sturdy fathers are toiling to make farm and homestead. Late of an afternoon we follow the iced logging-road under the shadow of the hemlock forest to a humble frame building for the children of lumber camp and sawmill settlement. Another week finds us in the hilly country discovering a rural school nestling in a nook by the steep roadway. Every boy at recess here catches up his skis, and tugs up the hillside to disappear from view. Six minutes later he comes sweeping down like a flash of light, with sparkling eyes, cheeks aglow, his flaxen hair streaming in the wind. These children are descendants of folk from the Norseland. Test the twenty-eight and not a child can hold up his thumb and say "I think this is a very thick thumb." Your sentence comes back from each one, "I tink dis is a werry tick tumb."

A week later under another leader we ride across the level marshes to stop at a cranberry settlement on a sort of island in the marshland where four families each furnish a quartet to make up the little school of sixteen. In still another section of our state the traveler drops into the deepest valleys and travels between the highest hills found in Wisconsin to stop at a weather-beaten schoolhouse by the roadside. To this building flows daily from each convergent coolie a stream of youthful life coming from the humble homes that dot the steep and unproductive hillsides. Later we emerge from this deep valley to enter the rich prairies where the great tobacco sheds tell of the dominant industry of that section, and the school registers tell of the many absences caused by the labor of planting, culti-

vating, cutting and curing this product of the soil. Another week brings a trip through the dairying section where cheese-factories and creameries dot the landscape more thickly than do the district schools. One week was spent in what the genial superintendent called the most rural of all Wisconsin counties. At that time this county was without a mile of railroad, had no saloon or jail, and within its borders there was not a single four-year high school. Here long rides across broad sandy stretches of scruboak and Jack pine led at length to the oases where we found a farmer settlement with its neat little school.

The visitor who thus travels through our state finds as wide diversity in the nativity of the children as in their varied surroundings. In one district every child is of Polish parentage, in another all speak Belgian, while in one not far away all are Bohemian. Scarcely a land or language of Southern and Western Europe fails to find its true representative settlement in some section of Wisconsin. Cosmopolitan indeed is this state of ours and great the problem of amalgamating these people of varied language, diverse customs, and divergent ideals. The public school must give the bond of a common language, inculcate new ideas and ideals, and bind together all these children by loyalty and love for our own state and nation.

There is a striking diversity in the size of these rural schools. A score enroll fewer than five children, while hundreds of them have an average attendance of fewer than ten. In two different schools I have found an enrollment of but three children, while in another there were registered ninety-seven.

The most deplorable discovery made was the fact that in many of the richest sections of the state there are whole townships in which not a single boy of twelve is enrolled in the public school. This was especially true in the region peopled almost entirely by foreigners. The speaker urged one boy of twelve to attend his little district school, but was met by the lad's declaration, "I did go, but I was the only big boy left, and so there wasn't enough to play even two old cat, and I quit." To this typical Badger boy had come the sense of utter isolation and loneliness that has driven thousands of Wisconsin farmer boys from these small and unattractive country schools.

In spite of all the educational progress our state is making, it brings a blush of shame to learn that two thousand country teachers of Wisconsin are today getting lower wages than is

paid to the kitchen girl in the cities of our state. Many a merchant or mechanic pays each year more to the maid who cooks his children's food than do all the farmer fathers of an entire district pay the young woman who is supposed to feed the intellectual and moral life of all the children of that community. Is it any wonder that such district schools can command the services of only untrained and inexperienced teachers with barely education enough to win a third grade certificate?

A DREARY PICTURE.

In the composite picture of more than two hundred schools visited there comes a touch of pathos. The rude box-car structure, frequently unpainted, stands by the roadside on its barren grounds devoid of bush or tree or vine to hide the utter nakedness. The two unsightly outbuildings standing in all their vulgar ugliness are often so filthy and so polluted with marks of profanity and obscenity that every fibre of manhood longs for match or torch to destroy utterly that which must taint the very fountains of purity. Inside are the dingy bare walls and curtainless windows. The absence of pictures, the dearth of equipment, the want of good teaching, the destitution and lack of uplift bring a feeling of chagrin that such conditions are possible in the proud state whose motto is "Forward."

Surely it should become a matter of state concern that the schools containing nearly one-half of our Wisconsin children should cease to have the poorest buildings, the most barren surroundings, the most meager equipment and the most poorly prepared teachers. Surely you, my friends, will willingly turn a little while tonight from thought of garden and orchard to consider the problem that touches most vitally the welfare of every farm home within the state.

In the solution of this great problem neighboring states are leaving Wisconsin far in the rear by establishing consolidated country schools and providing for transportation of the children. Ohio, Indiana, Illinois, and a score of other progressive states are thus taking out to their farm homes graded schools and high schools as creditable as those found in the more enterprising towns. Surely no adequate solution can come for this vital problem that does not give farmer boys and girls a chance

to measure up fairly well in education, power, and training with their city cousins.

OTHER STATES DO BETTER.

Wisconsin has already a few creditable township high schools. Let there be united and aggressive effort to increase their number, and to establish strong consolidated country schools wherever transportation seems most feasible. Let the buildings erected be attractive in architecture, modern in plan and equipment, flooded with pure air and abundant sunlight. Let there be provision made for teaching manual training and domestic science. Let the course of study touch more closely the art of agriculture and the life upon the farm. Give opportunity for the boys and girls in these schools to return each night to the farm roof to enjoy the sweet influences of home life and live under the watchful, sympathetic care of father and mother during those formative years when habits are being fixed and character is formed.

Let us provide for these attractive school homes appropriate and ample grounds. Let there be provision for a well-kept grassy lawn in front dotted with clumps of shrubbery and brightened with the color of a few flower mounds. For the background of the picture let there be fine shade trees and a graceful border of shrubbery. Let climbing rose and clinging vine give grace, to the symmetry of the building. Let both picture and setting be a source of satisfaction and pride on the part of every boy and girl fortunate enough to share the beauty and the benefits of this school home.

Let there be abundant room for school garden and grounds for agricultural experiments. Let there be grown here the best varieties of grains and Indian corn. Plan-out and cultivate a model farm garden wherein are grown the finest sorts of vegetables and small fruits. Let this school be kept in living touch with experiment stations of state and nation and with the agricultural schools of county and commonwealth. Let these gardens of the school and all its activities touch with living contact the varied interests of the farm life and the comforts of the farm home. Let the great underlying principles of botany, physics, chemistry, and physiography here be taught so clearly,

so simply, and so practically that they shall illuminate all future life and work of the farm home. Let this school become a distributing center for the best current literature that comes to uplift and improve rural life.

Let there be on this school campus abundant room for a playground where all the youth of the entire township may engage in strenuous games of football, baseball, basketball and all the vigorous sports that make for improved physical manhood. The country youth must be made to feel that country life means something more than long days and hard toil. Let him learn the games that give lithe limbs and supple bodies and bring the buoyancy and joy of living. Think what such mingling of all the young men of an entire township would mean in the enlarged social life and the fostering of broad public spirit. Contrast the stirring emulation and comradeship fostered here with the isolation and loneliness of the poor little country school where the boy declares, "There war't enough boys left to play even two old cat."

Let there be held in these central rural schools contests in declamation, oratory, and in debate with other schools of the state. Let there be given musical and literary entertainments, and a course of lectures by the best attainable talent. In other words, let this central rural school prove the intellectual, the social, and the spiritual center that shall uplift and unify the people, and create even in the children a consciousness that country life may be made ideal life for old and young alike. The poverty and the weakness of the average country school is the factor that is doing most to drive to the city the best and most enterprising young people found in the farm homes. The modern model consolidated country school will lead the farmer boys and girls to love country life and to find in their father's vocation one that means strength of body, peace of mind, independence, competence, comfort and joy of life.

From such environment and training the intelligent young farmer learns that he may here wisely invest the best of knowledge, training and skill. The daily toil has ceased to be a grind, for he has come to regard himself as a productive factor in the great economy of the world. He finds new beauty in flower and bush and tree. Earth and air and sky speak a language full of meaning for him. The sprouting seed, the growing plant, the

forming flower, the fertilizing pollen, the ripening fruit are for him miracles full of meaning. Around his own fireside the good and great of all time gather at his call to converse with him and with his children. In the enjoyment of home and farm and garden this farmer finds the peace and contentment of a new Eden. This education has made the farmer a more intelligent worker, a clearer thinker, a broader, better citizen, and a worthier man.

Our versatile president recently appointed an able commission to investigate the conditions of country life and to suggest a solution for some of the farmer's most serious problems. In a session of this commission recently held at Madison, the farmer folk of Wisconsin gave testimony that the problem of good country schools is the vital one that needs solution. Many a farmer is leaving the old home to seek in town or city some other means of livelihood while he there educates his children. Thousands of farmer fathers and mothers are now sending away from home the boy and girl of fourteen that they may win in the city the high school education denied them at home. Today I came through a town having a population of twenty-five hundred where two thousand dollars in annual tuition is taken from farmer boys and girls attending that one high school. Thousands of country boys and girls ambitious to win such a high school education cannot be spared from the farm and a still greater number are deprived of this privilege because their parents cannot afford the cost for four years of sending their children to the city high school.

Brainy men in every part of our land are organizing in intelligent effort to solve the problem of the rural school. Brains are bettering country roads, are harnessing Nature's forces to farm machinery, and carrying modern comforts to the farm home. The brain and heart of the nation made possible daily mail delivery for every post office box found now on the farm yard gate of the most remote country places. The wealth expended in this rural free delivery counts for naught against the added comfort it brings and the increased intelligence it fosters. Aerial navigation has been made possible by American invention. Surely the combined intelligence of the nation will find a way or make one to give a square deal to the young people growing up on the farm. Whether the solution be consolidation or some newer plan, it must bring to all equal opportunity to win a diploma from the college of the common people. Surely our state will not let increased

cost count against giving as a birthright to every Badger boy and girl the opportunity of a high school education. Education all the way from the kindergarten up to and through the great state university should be for every Wisconsin youth as free as the water he drinks, the air he breathes and the sunshine he enjoys.

Let the State Horticultural Society lend its energy and wield its influence for the attainment of this ideal. For these consolidated country schools it will prove a delight to furnish free plans for ample grounds with grassy lawns and green shade trees, with school gardens and experimental grounds, with roomy playgrounds, and with all the environment of beauty and culture that shall bring joy to the hearts of all country boys and girls now hungering for the higher and better things.

AFTERNOON SESSION—WEDNESDAY, JANUARY 13.

Mr. Toole, the newly elected President, took the chair.

The President: Dr. Loope is here and has something to bring before you which I think you will be pleased to consider.

Dr. Loope: I often wish that I were eloquent, that I could make a speech that would thrill you, but the only way I have to talk is just in a common sort of way. We have in our society a man whose whole life has been devoted to horticultural subjects, very largely, almost exclusively, who has studied the subject exhaustively, who has made a friend of horticultural knowledge in the State of Wisconsin, you might say; who has been connected with this Society for many years, from its inception, and is today one of our oldest and most respected members, a man whom you all know and you could not help respect if you ever saw him, and if you did not know him, why, he would impress himself on you so that you would remember him. It has always been so, and I want to move you now that in consequence of the many, many horticultural truths he has brought forth and his horticultural knowledge, and the fact that he has been a power in the Society, I want to nominate Mr. George J. Kellogg for an honorary life member of this Society as a mark of particularly distinguished merit.

Mr. Richardson: Mr. President, on behalf of the younger members of the Wisconsin State Horticultural Society, as a

recognition on our part of his upright character and sterling integrity and of the benefits conferred upon our Society, and, broader than that, for the benefits that this man has conferred upon the horticultural interests of Wisconsin and of the Northwest, I rise here today to second the nomination of George J. Kellogg for honorary life membership in our Society, believing that in so doing we are conferring upon the staunch old veteran of many summers the highest honor that lies in the power of this Society to present. As I said, on behalf of the younger members of this Society I second that nomination.

Mr. Smith: In behalf of the Gardeners' and Foremen's Association of Lake Geneva, I wish to further second that nomination.

The President: The most honorary within the gift of this Society. We desire to make it as cordial and emphatic as possible, and therefore I ask you to sustain it with rising vote.

Motion unanimously carried by a rising vote.

The President: We will be pleased if Mr. Kellogg will at least rise, if he does not feel like speaking.

Mr. Kellogg: This has taken me by surprise. They put on a little too much taffy. I might object that it did not come years ago; I do not know that I was entitled to it, but I thank you very kindly for the expression, and the unanimous expression. I have not been all these years working for the Society; I have been working for myself, but I have done what I could, I thought I did at least and when I quit the nursery work and went to Lake Mills to quit work, I quit it by setting out 80 varieties of strawberries, and I have been quitting it ever since, and I have got so that in the summer time I work on the eight-hour system, eight in the forenoon and eight in the afternoon. I have a quarter of an acre of ground that has 70 fruit trees growing and many of them bearing; I have probably over 100 varieties of apples growing on those top-grafted trees; one tree has 40 varieties; another 12 and another 15, and I have three pear trees this year that had to be propped up.

POSSIBILITIES FOR COMMERCIAL FRUIT GROWING IN WISCONSIN.

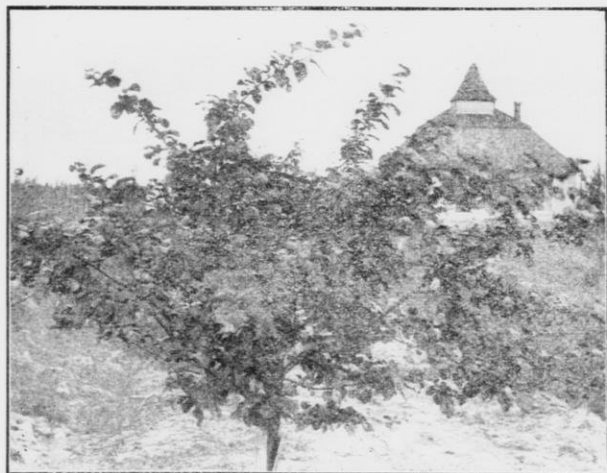
E. P. Sandsten.

In the past I have been somewhat sceptical as to the outlook for commercial fruit growing in Wisconsin. This early impression I gained not only from the discussions in this Society, but from actual observations in the state. A great deal of emphasis, I might even say too much emphasis has been placed upon the all-absorbing question of hardiness. In fact, this nightmare has so overshadowed all other factors in fruit growing that many of us have been unable to properly appreciate many of the advantages that Wisconsin really offers along many lines of commercial orcharding.

Why did the early pioneer fruit growers in the state fail, and why are we reminded in and out of season of their failures? A little reflection I think will clear up this subject and forever banish this nightmare of failures which has hung over us so long. First, we should bear in mind that these early fruit growers like all the early pioneers, settled on the prairie or open land where there was no original tree growth. This very fact is a sufficient cause for failure. Trees accustomed to more or less sheltered conditions, or at least to a broken or rolling country will not succeed on the open prairie. Take the mountain ash for example. This tree is a native of Northern Wisconsin and is found wild on the shores of Lake Superior, yet it will not do well, if it lives at all, on the prairie of Southeastern Wisconsin. Hence it should occasion no surprise if many of the Eastern varieties of fruit trees should die under the same conditions. Even our native crab apple is not hardy on the open prairie, nor does the wild plum dug up from the wood and planted on the open prairie prove hardy. Further, even in the most favorable apple growing states there are locations where apples cannot be grown profitably. Why then should Wisconsin be an exception and why should we base the whole future of fruit growing upon the past experience of the pioneer prairie settlers. Their experience and accumulated wisdom, are valuable and good for prairie conditions and for



Wealthy apple tree in Poplar Orchard; planted 1904. Photo Aug., 1908.



A Hibernel apple tree in the Poplar Orchard; planted in 1904, bore over a bushel of apples in 1908. Photo Aug., 1908.

such conditions they have rendered priceless service. But even on the prairie land, the original conditions are being changed. With the settlement there has come the planting of shade and forest trees. Buildings of various kinds have been erected and the old windswept conditions are gradually disappearing and with them a new era in fruit growing will develop.

Perhaps this question of hardiness has done some good in preventing a promiscuous planting of eastern varieties which, as we all know, will not live in many sections of the state, while on the other hand, it has led to excessive experimenting with worthless kinds and a great mixture of varieties.

In spite of the wholesale condemnation of eastern varieties, there are localities where many of these so-called "tender" varieties can be grown with success and profit. Our failures have in many cases been due to lack of good management, to proper methods of cultivation, pruning and spraying, together with poor judgment in the selection of varieties of trees and to site and soil. I am convinced not only from our own experience at the Experiment Station, but from actual observations all over the state, that commercial orcharding can be made as profitable and safe an occupation in Wisconsin as anywhere in the United States. I make this statement with the full knowledge of the marvelous results and profits obtained in other apple-producing states. These statements are backed by facts and not by fancy. Every year, many car loads of summer and fall apples are shipped into Wisconsin, especially into northern Wisconsin from the east and from the west, and sell at prices that are considerably higher than obtained anywhere else. I have a record of one of six car lots of crab apples shipped into Superior and Duluth from Montana, and selling at wholesale for \$1.25 and \$1.50 a bushel. Think of it! What a gold mine this would be for our own growers! The extra profit received from the difference in rates from Montana to these points would make a large item. Further, large quantities of Michigan fruit is yearly shipped into the northern half of the state at good profits. Now, no one can deny but what crab apples and summer and fall apples can be grown in Wisconsin, and be grown with success. As for winter apples, we can well afford to let them alone for the present, but even in this, we can be dangerous competitors with other states. When we can grow apples like the Wealthy we can also provide for

the cold storage so that these can be marketed during the months of December and January, and thus compete with the eastern apples that are shipped into the state. Further, it is recognized among eastern fruit growers that the Wealthy apple is equal and in many cases, superior to the standard winter apples of the east. In fact, the Wealthy is now planted extensively in the east, and is recognized to be the leading fall variety. Further, large quantities are held in cold storage for the winter market, selling at prices equal to the best. One single grower in northern Maryland has 100 acres in Wealthy. If we could confine ourselves to a few standard sorts, and build up a reputation with these sorts, we would make a great advance as a fruit growing state.

After travelling over this state for a number of years, I have become convinced that we have several sections that are admirably adapted for fruit growing. These sections are in many cases not continuous, but are isolated and are the results of topography and geographical location. One would naturally suppose that the best fruit sections would be found along the border of Lake Michigan, and this is true, providing the elevation is sufficient and the character of the soil suitable. There is no question but what apples, plums, and cherries in great varieties can be grown in this section, providing as I have said, that the elevation is sufficient and the character of the soil favorable. Further, there are local conditions in practically every county in the state where large fruits can be grown with profit, possibly excluding those counties and sections of swamps and low sandy lands, and possibly excluding the most northern portions excepting the Bayfield peninsula, but even in these sections a few varieties can be grown. Apart from these there are marked fruit regions, for example the section in and about Baraboo including what is known as the Baraboo Range, and westward into the counties of Richland, Vernon and Crawford. This section is perhaps one of the best fruit regions in the state, and it is only a question of time before commercial orchards will be dotted all over. From my own observations, I am convinced that even the despised Ben Davis apple can be grown successfully in this region. In fact, some of the best specimens of the Ben Davis apples and apple trees I have ever seen were grown around Baraboo. Further, we have to the southwest of Madison a large territory composed

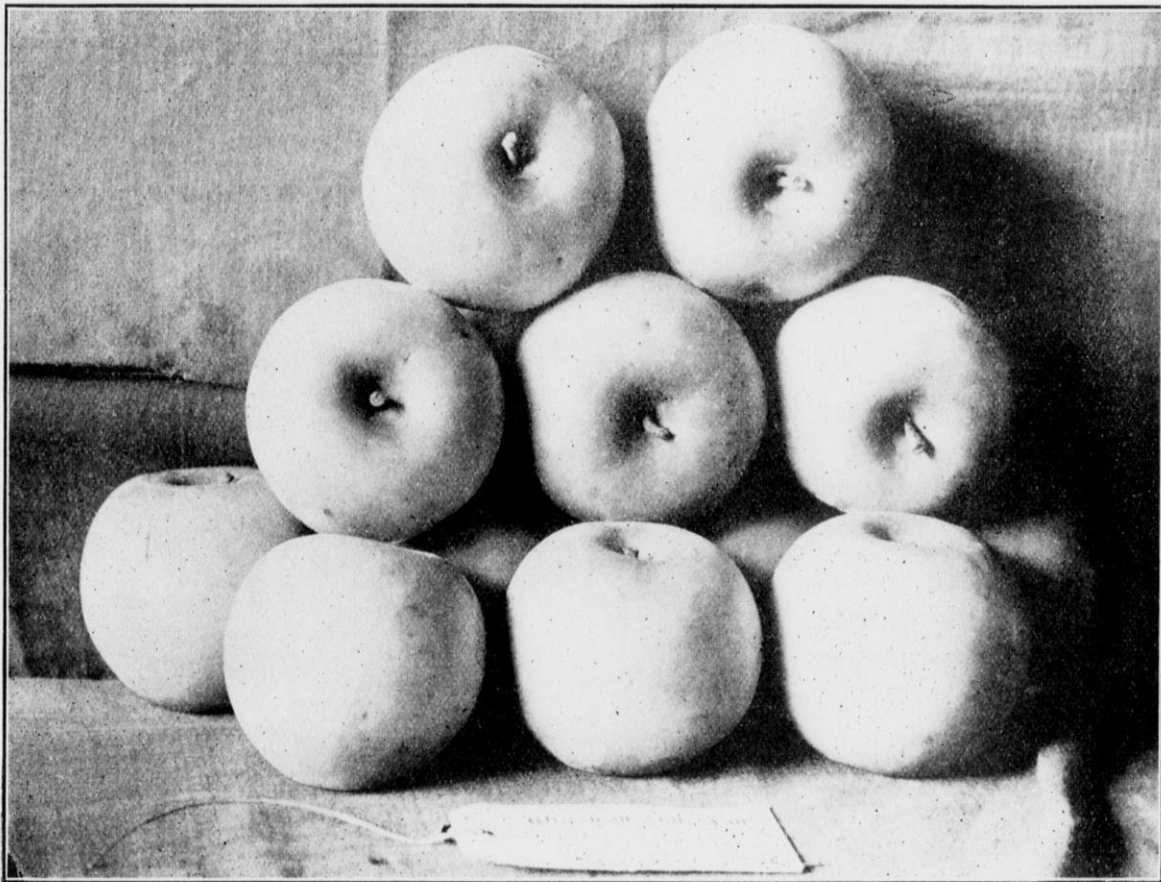
of a broken country that has numerous fine sites and locations for commercial orchards. In fact, these lands are better adapted for fruit growing than those farther south, especially in view of the fact that the southeastern counties are more of a prairie nature and trees planted on such lands are subject to winter killing from the effects of the dry winter weather, while those on a higher elevation and in a broken country are not so exposed.

Perhaps we are more interested in pointing out in where we fail in commercial fruit growing in Wisconsin, though this subject has been discussed scores of times, still like all good things, needs repeating.

First I would say that our failures, apart from the lack of proper orchard management, selection of soil, have been due to indiscriminate planting of varieties. The truth of this statement can be verified in practically every orchard in the state, large and small. Take almost any of our large growers in the state, and hardly one of them can fill a reasonably large order of one variety of apples. This fact prevents the grower from getting into the big markets, and thus he is unable to make it worth while for the buyer to take hold of his crop. No commercial orchard can be a success when it is composed of a score of varieties. To be sure, many of these orchards were planted as an experiment, but is it not time for experimentation to end so far as the grower himself is concerned? I think it is. The Horticultural Society and the Experiment Station can tell very accurately what varieties are adapted to the state, and they can also tell what varieties are the most profitable to grow. Further, the average farmer and fruit grower is no experimenter, nor can he in most cases afford to plant an experimental orchard, as experimental orchards as we all know are not money producers. Further the expense of handling a mixed orchard is considerably greater than one of few sorts, not only in spraying and caring for the orchard, but also in picking and packing.

Another important cause of failure is the universal practice of setting the trees too close together. There are very few orchards in the state where the trees are set sufficiently far apart to permit of easy cultivation, and to provide a normal and full development of the trees. Trees set too closely are not only more difficult to cultivate, but are more subject to the attack of insects and fungus diseases. It is more difficult to spray

the orchard, and when the trees are growing close together, they produce too much shade to properly color up and develop the fruit. Further, the fruit grown is small and inferior. There is not enough circulation in the orchard, and fungus diseases thrive under just such conditions. The proper distances to plant apple trees in Wisconsin is from $2\frac{1}{2}$ to 30 feet apart. Many growers argue that this is a waste of space, but few of our varieties will stand closer planting if the trees are going to produce a maximum crop of first-class fruit. Again, our farmers and fruit growers do not plant the right type of trees and the nurserymen are to blame for this. The tree that is the most economical for the nurserymen to grow is not always the kind of tree that the grower ought to buy. The nurseryman aims at size rather than at form. In fact, our fruit trees are sold by the calibre or size regardless of the shape of the trees. By this method, the nurserymen can grow a larger number of trees on a given area than he could if he grew ideal fruit trees which require about twice the amount of space. Again, the fruit grower is to blame for buying these poor trees. He is also to blame for endeavoring to obtain fruit trees at the lowest possible price. This is a wrong idea. It is not the original cost of the tree that makes it a valuable or poor tree. When a farmer pays ten or twelve cents for a tree he gets a tree worth that amount, but such trees will never make an ideal and profitable fruit tree. It would be money in the grower's pockets if he would pay twenty-five or even fifty cents for trees that have the desired form and size, for the first cost of the trees is very small when we compare it with the results that we are to obtain from the trees during their whole life time. It is vitally important that the grower should bear in mind that when he pays a low price for trees he gets cheap trees that are really not worth planting. Nursery agents and advertisers of cheap nursery stock are doing more harm to the development of profitable fruit growing in Wisconsin than almost any other factor. There are grades of fruit trees as well as there are grades in every commercial product, and if we do not start aright in orcharding, failure will be written over the future orchard. What we need in Wisconsin today is an application of the fundamental horticultural truths, rather than conducting experiments and discussions of subjects that have only a



First Premium Northwestern Greenings at Wisconsin State Fair, 1908.

secondary bearing upon horticulture and horticultural practices. We have accumulated facts and experiments enough to enable any intelligent person to start in commercial fruit growing or fruit growing for home consumption in the state. What we need today is an application of what we really know rather than branching out for other things.

DISCUSSION.

Mr. Geo. J. Kellogg: I am glad the Professor is converted partly, I hope he will be converted more and I wish he would describe that model tree that is worth fifty cents.

Prof. Sandsten: I said a fruit tree or a plant is as much an individual as an animal, and because you can buy one cow for \$15 is no reason for saying that a cow is worth \$500, but those people that buy a cow for \$500, make more money than the person that buys one for \$15. That is true of apples. If you cannot get a good apple tree, do not plant any, and if you get a good apple tree, the right size, right shape and right growth, it is worth fifty cents, if it is worth anything.

Mr. Hager: These reports of ours go broadcast, and I would like to get something more definite. Thousands of our reports go out to people who anticipate planting and are planting trees, and I am afraid they are going to get the idea from this that they ought to pay fifty cents for a tree. I wanted to bring out something a little more definite. He has not specified what kind of trees we ought to have. Maybe when he tells us that, what kind of tree we ought to plant, we will agree, and the planter will agree that he ought to pay fifty cents.

Prof. Sandsten: I had pictures with me and expected to throw them on the screen and show you an ideal apple tree, a tree that is worth fifty cents. I do not mean to say that trees sold under present conditions—and bear in mind, I do not blame a nurseryman for selling trees at fifteen to twenty-five cents, that has nothing to do with it, because the nurseryman will sell what he has to sell and what a farmer is willing to

stand for, but I mean to say that a good, ideal tree, such as I would have shown you if I had the lantern, is worth fifty cents if you have to pay that for it, but if you can get it for less, so much the better, but in proportion to paying ten cents for a poor tree, a good, ideal tree is worth fifty cents.

Mr. Geo. J. Kellogg: I wish to call on Mr. Palmer to specify what kind of trees he has been planting.

Mr. Palmer: I do not believe that it makes any particular difference whether we pay 50 cents or 15 cents for the tree, it is the tree we want. I have bought trees for considerably less than 20 cents that in my judgment were a great deal better than the trees that I have seen sold in my neighborhood for 35, 40 or 50 cents. The tree is what we are after, and not the price. I would not hesitate to pay almost any price to get the tree that I wanted, but usually, as far as my judgment goes, the trees that are sold for the highest price are really the poorest trees. In our section we can buy trees, if we know what we want, for a reasonable price, while the ordinary agent that comes through our country selling trees for 35 to 50 cents is just selling the usual trash.

Mr. Tippin: We have been through this very trouble in Missouri that you find yourselves coming up against in Wisconsin, and I am afraid from some remarks that are being made that the wrong impression may go out. I speak from an experience of twenty years as a propagator. I discovered a great many years ago that statements made by horticulturists and horticultural societies were taken advantage of by the tree sharks, and I dare say if there should happen to be any here now, that by next spring you will have among your tree sharks those that have got a specially propagated, patented, trade-marked tree that has all the elements in it that you want, and it is worth fifty cents and you pay for it. This Horticultural Society, in my judgment, cannot do a better service than to educate its members as to what a No. 1 tree is, and also to illustrate how first class or No. 1 trees can be propagated, the importance of following up the better strains of the different varieties, and if it will not take too much of your time, I will give you my idea of a No. 1 tree, and understand, that it is not

based upon the theory that it has got to be grafted on some foreign stock, grafted in some peculiar way, or brought about under some peculiar mystery. A No. 1 tree is a tree thrifty grown, with well balanced roots and with a well balanced head. In my country, a No. 1 two-year old tree should be five to six feet in height according to variety, some higher; it would be of a caliper of 5-8 to one inch, according to the variety; it should be equally balanced, and, above all things, see that your tree when you buy it has a well balanced root system, not all the roots thrown out upon one side or the other, or out of shape. The greatest trouble comes from propagation, but in defense of your nurserymen who are trying to do what is right, I want to say this and then I shall sit down. I undertake to say, judging from my own experience, that the most conscientious nurseryman that you have in Wisconsin could send his men out ten, fifteen to twenty miles from his home to the trade, the custom, and honestly represent his stuff, and nine out of ten of you will say to him, "Well, I am thinking about buying trees in the spring, but I am close to the nursery and when the time comes, I will go and get them." He may not be out of sight of the farm when some fellow comes from Missouri or Michigan or New York or from the West or somewhere else, he has got something, some choice thing that your neighbor nurseryman has not got, it is propagated in a different way, it has some special merit in it, some special hardiness, and he is only passing, and before your neighbor knows it, he has signed his name to twenty-five or thirty or fifty dollars worth of trash, and in defense of the local nurserymen, I will say that his life is the hardest of any man on earth. I am out of the business now.

Prof. Sandsten: I did not say an apple tree was worth fifty cents if you can get it for less, but I will say it is better to pay 50 cents for an apple tree that is good, than to pay 10 cents for a bad one.

Prof. Sandsten then illustrated by means of the stereopticon the type of tree that he would recommend planting.

PLANTING ABOUT RURAL SCHOOLHOUSES.

DANIEL A. CLARKE.

This is the subject that has been assigned to me for a brief consideration. Now I should feel that I was doing a real harm to school ground betterment, if I omitted to speak of certain other matters relating to the schools. So permit me to call your attention very briefly to certain fundamental factors of good school grounds. First, the ground should be broad and large. There should be breadth of space for play, for instruction, and for all the features needed by the progressive school of the present. The house should be so placed as to secure the highest utilization of this ample area. The exact position will be determined by the peculiarities of each particular case. Yet we may safely say that it should not be located right on the highway nor in the very back of the lot. Some intermediate point will permit of nicer adjustment to the lawn, to the playgrounds, and the school gardens. Then the boundaries of the grounds should be marked. The space should be surrounded and framed. This enclosing feature, whether a fence, a wall, or a hedge, should be simple and dignified. Then the service and sanitary arrangements should be considered. Provision should be made to care for waste matters, such as, ashes, papers, and the like. There really ought to be no detached woodsheds or outbuildings. These ought to be provided for in connection with the house itself. If this is impossible, all such features should be carefully screened from view by planting. Where the space is sufficiently large, there should be a lawn. Though this should never be attempted at a risk of curtailing the ground to be used for the children's play. To playgrounds the greatest part of the whole area of the lot should be given. The size should be such as to provide adequately for the children's games. The surface of the playgrounds should preferably be of gravel and should be free from stones or rocks. Then the drainage should be good so that the grounds can be used for as much of

the year as possible. Every school ought to possess something in the nature of a school garden. Such gardens interest and educate the children, and if well planted and cared for, lend attractiveness to the surroundings.

Now let us discuss our subject proper, that of really planting about the school house and its grounds. The first question that confronts us is, where shall we plant? Usually the boundaries will need attention. There may be a call for protection against winds and storms, there may be need for screening unsightly features, and there is always the desirability of enframing the grounds. In the case of a given school, one or all of these reasons may hold good. These needs may be met in several ways. There may be a wind break composed of trees, there may be a hedge or there may be a mixed plantation of trees and shrubs.

Then about the house itself, there should be planting. Just as in the case of the dwelling, the schoolhouse should be connected with its site. There should be a harmony between the building and the ground immediately about it. This may be accomplished by massing shrubs against the foundation, or by training vines on the very building itself. Shrubs may be massed in the angles, around the corners, about protruding bays, and by the steps. The mass itself should be irregular yet graceful. Here the shrubs should come forward, there recede, here the lines should be continuous, there interrupted, while everywhere there should be a nice transition from the ground to the building itself.

There may be other occasions for planting aside from along the boundaries and about the building. This will depend upon the size and character of each particular school ground. It may be desirable to have shade trees, though care should be taken not to have too many of them nor to have them too near the building. These should skirt the grounds and be rather widely spaced. If there is a lawn, as there ought to be, in front of the house, we will want to plant shrubs and flowers about its borders. We should not spot it with flower beds nor clutter it with specimen shrubs. It should be free and open. If there is a school garden, this will have to be planted. There

should be spring bulbs and other hardy flowers, late annuals and autumnal perennials. Then of course there will be the grains and the vegetables. In all this matter of rural school gardens it is well to bear in mind that they should have a character of their own distinct from the city or the village school.

Now there remains the question of what trees, shrubs, and flowers we shall select. There are several possibilities. We may choose from the native plants, from those foreign or exotic plants which have proved themselves hardy and desirable, or, we may mingle varieties from both of these groups. This latter course would seem to be preferable under ordinary circumstances. So we will let our native trees and shrubs form the framework of our plantations, and place against this background the very best of the exotics. The native plants are comparatively inexpensive, are hardy and vigorous, harmonize with their surroundings and possess a decided educational value. The exotic should be used because they are showy, afford variety and make unusual appeals to us. In selecting varieties from these two groups, attention should be given to hardiness, to shape, to the period of bloom, and to the general attractiveness. It hardly needs to be said that for the school yard a shrub must be hardy and unusually vigorous. Then as far as possible, those shrubs should be selected which bloom during the school season.

Even with all these problems solved and the selection of plants made, to insure good results there must be a planting plan of some character. The real need is for a carefully thought out scheme of planting, no matter how simply it may be expressed on paper. Even if it cannot be executed in its completeness, there should be a comprehensive planting design. Yet even with this plan success is still uncertain. It must be carefully and intelligently carried out. The plants must be grouped on the ground in the same spirit with which they have been indicated on the plan. There must be a compliance with all those cultural facts which are essential to plant growth and prosperity. Then, after the plants have been set they must not be left to care for themselves. There must be a careful and constant maintenance of all the plantations.

DISCUSSION.

A Member: What trees would you suggest?

Mr. Clarke: American elm, sugar maple, varieties of oak, cut-leaf maple; but I think you want rather few trees and good trees, you do not want too many.

A Member: For smaller shrubbery, what would you introduce there, spiraea?

Mr. Clarke: Yes, spiraea Van Houttei, spiraea callosa, the Japanese rose, the lilac, but mostly the native shrubs.

A Member: Supposing you want to introduce a few flowers, where would you put them?

Mr. Clarke: I would put the flower beds against the borders.

A Member: What would you introduce for flowers in the schoolyard?

Mr. Clarke: Well, I would use some of the early varieties, plants like the Tulip, Crocus and Narcissus, those for the reason that they come early while school is in session, and then we might get some hardy perennials like the Iris.

APPLES IN MONROE COUNTY.

MR. FRED MUHLENKAMP.

We often hear the remarks of farmers that they are not going to have any apples at all this year, it is an off year. I think with the exception of a killing frost during blossoming time, or shortly after, the year, as a general thing, has nothing to do with it. What then, is it that causes the so-called off-years? It is over-bearing with some varieties, neglect, poor care, you might call it starvation with others.

Thirty years ago last spring I planted the first one hundred trees of an orchard of 1,000 trees; sixteen years ago I planted several hundred trees of which twenty were Longfield that

were planted in good soil, taken good care of and it was not long before they came into bearing and they bore every year, in fact they were overloaded. I said to my boys, "We will have to do something to those trees, fertilize them pretty heavily; if we should happen to get a cold winter it would weaken them so they would die." So we did, and twenty of these trees have not missed a crop; they were actually overloaded every year. Of course they told us we should thin them out, pick them out. I thought it was quite a task for the stingy cook to count the peas to put into the pot, but I think it is a great deal more of a job to thin the apples on the top of a tree twenty to thirty feet high, so when these trees were overloaded every year I asked myself, cannot there something be done to kill some of those blossoms during blossoming time? Three years ago last spring, seeing the killing effect of salt brine on vegetation, I says to myself, why not try to kill some of those blossoms during blossoming time, so I mixed one gallon of salt with eight gallons of water, went to work and sprayed a couple of these trees in full blossom and I tell you I made some hard looking trees. It killed the blossoms, we had an off year that year; it killed the leaves also, but they outgrew it again, six weeks afterwards you would not know the difference. Two years ago I took one gallon of salt to fifteen of water and found that a little too strong. Last year I took one gallon to twenty and found that about right. It destroyed the blooms and it did not hurt the leaves any. Now, some of you might think what is the use of spending that time talking on the Longfield, it is not a first class commercial apple, at the same time, take a Longfield, a barrel of good sized, well colored Longfields, and you have something nice, something to make sore eyes well to look at, and they will sell in our markets pretty close to the Wealthy, and they can be grown easier in Monroe County, any locality, than peaches, even easier than peaches. I have often called it the lazy man's tree, because there is no other variety known that will produce that much fruit with poor care, only the main fault is their overbearing. Of course it is not the Longfield alone that is troubled with overbearing; there are

lots of other varieties. If I were to set out an orchard again of a thousand trees, I should plant all Hiberna, and I will say now that I think there are but very few in the hall that will agree with me—and top-graft these Hiberna with a late and an early variety. I have got trees bearing which have been that way for years and I find them way ahead of all my other trees. When I first started to top-graft, a neighbor of mine coming from Ohio was interested in raising fruit, and he said “Don’t you top-graft an early variety on a late. It will not do, it will kill the tree.” But it is not so. The Tetofsky will grow with the Melinda on the same tree all right, but of course then it would take more tending to an orchard. As a general thing, the nearer we come to a winter apple, the better care the tree needs. It is no trick in our locality to grow summer apples, such as Duchess, Transparent and even the Longfield, but when you come to winter varieties, they have to have particular care, especially the old Walbridge and several others; by setting out an orchard and giving them about all the same care, there are lots of varieties that do not show up what they will do under good care. I find the Newell one of the most profitable apples I have got out of about thirty-five to forty varieties, but it takes high culture. If there are any questions in regard to this, I will try to answer them.

A Member: Define high culture as you understand it.

Mr. Muhlenkamp: I plow the ground, fertilize them pretty heavy every three years; sow it into clover again, as soon as the clover runs out into June grass, I plow it again.

A Member: What do you fertilize with?

Mr. Muhlenkamp: Barnyard manure.

Mr. Kellogg: Have you Patten’s Greening?

Mr. Muhlenkamp: Yes.

Mr. Kellogg: How does that do?

Mr. Muhlenkamp: Pretty good, just the same as North-western Greening, does about the same in my orchard.

A Member: Have you the Windsor Chief?

Mr. Muhlenkamp: Only small trees.

A Member: Did you ever top-work a Hiberna with a Wealthy?

Mr. Muhlenkamp: Yes. I tell you why there is an advantage in top-grafting that way, you have all noticed by taking apples off the tree, by picking the early variety off that those left on the tree will grow very fast after part of them are picked off.

A Member: We grafted the Wealthy on the Hibernial and did not find the stock congenial. They all blighted. We tried it two years in succession and gave it up.

Mr. Muhlenkamp: I invite you gentlemen to come to my place next year and you can find the Wealthy on the Hibernial and all these winter varieties, trees large enough to grow six to ten bushels of apples and have been growing just as nice a tree as any in the State of Wisconsin.

Mr. Hager: How many varieties would you put in a commercial orchard if you were not going to top-work?

Mr. Muhlenkamp: Not very many. I should put in the Melinda, because the Melinda does not need top-working; I should put in the Northwestern Greening, but I would not grow it on its own root. It does not do very well in our locality on its own roots, it does very well top-worked, and the Newell, that is three, Salome is four, and the Wealthy. I think that is all I would plant.

Mr. Hey: I should like to know whether it is advisable to graft Grimes Golden on Northwestern Greening. Northwestern Greening does not seem to be an apple that is suited to our part of the country and we want to top-work them to something else.

Mr. Muhlenkamp: No, I would not. First, in that part of the State the Northwestern Greening dies on the roots; I spent two days traveling over that county this fall and looked over a good many Northwestern Greening that I had sold six or seven years ago and everyone I found was killed from the roots, and another thing, when they stand up high the Northwestern Greening has pretty brittle wood, the wind may blow the limbs off before there is ever an apple on it. I have two rows along the road that are up high and the wind has blown off a good many limbs before they ever came to bearing. By grafting

them onto the Hibernial, that is stopped, because no limb would come off the Hibernial; a cyclone might take the whole tree, but it never would blow a limb off.

Mr. Palmer: Then you let the top form on the Hibernial and then graft?

Mr. Muhlenkamp: No, I would graft them right off the first year after planting. You do not want to let the top grow first, you would lose at least two years.

MATHEMATICS IN HORTICULTURE.

D. E. BINGHAM.

Mathematics is that Science or class of sciences that treats of quantities or magnitudes. Horticulture is the art of growing and cultivating fruits and flowers, etc. And some may wonder why mathematics has any business mixing in Horticulture but I will mix it with the art of growing fruit only as a means of proving what can be accomplished.

It was my privilege this summer to visit the trial orchard located in Crawford Co. at Gays Mills. After looking over this orchard planted, in the spring of 1908, and finding only two trees had died out of 375 planted, and also noting the character of the soil and growth of the trees it occurred to me why not hundreds or thousands of acres of fruit on these fine ridges of Crawford County.

Our worthy Sec., Mr. Toole, and myself, while waiting for the train, were talking over matters pertaining to apple culture and we seemed to be all of one opinion, that we needed enthusiasm, faith, business fore-sight, energy, conviction and courage to carry out our convictions. It was then I said I could show by figures what an orchard could be made to pay.

Our Secretary concluded that I could build the largest air castles of any Horticulturist he had ever met so asked me to show for the benefit of the meeting how 100 acres of orchard could be made to pay.

Now I will take 100 acres of cleared land and 40 acres more on which to produce feed and pasture for the stock necessary to carry on this farm. It is a poor farmer who cannot make a living on 140 acres, so we will leave cost of labor out of the question.

The land can be purchased at forty or fifty dollars an acre, making the investment \$6,000.00 or \$7,000.00.

Add to this 10,000 fruit trees, planting at a cost of \$1,500.00, and teams and machinery for \$1,500.00 more, and we have a farm of 140 acres with 100 acres of apples at a cost of \$10,000.00.

I will plant 100 trees to the acre using the Wealthy for sake of argument, other varieties may do as well, and cultivate this orchard for 5 years without counting any income from the trees, though of course, there will be sufficient to buy spray material after 3 years.

We now have a debt of \$10,000.00, our farm in good shape and our trees at the bearing age.

All who have had any experience with the Wealthy know that it may produce 1 bushel of apples the sixth year after planting and counting one half the trees are bearing, the aggregate will be 5,000 bushels. These ought to sell, if well grown, from 75c to \$1.00 per bushel net, making the sixth year sale from the orchard from \$4,000.00 to \$5,000.00.

Now perhaps many are saying that is too large and it may be so. And as we have 4 years before the orchard is 10 years old let us strike an average of \$4,000.00 per year for 5 years making \$20,000.00.

We had \$10,000.00 cost on this farm, now we can pay that and take the other \$10,000.00 and pay for our buildings, repairs, labor, etc., making the farm independent at 10 years and ready to yield an income to the owner that could not be realized in any other line of farming and the farm more valuable than one devoted to agricultural crops.

In Door County, my home county, 15 years ago fruit land or that land now used for fruit could be purchased for \$10.00 to \$20.00 per acre. But now after 14 years of demonstration the

price has gone up to \$100, \$150 to \$200 per acre. And why? Because the problem has been worked out and proven.

The gross receipts from 8 acres of cherries for 6 years beginning the 4th year after planting was \$10,700.00 or an average of \$1,783.00 per year for the fruiting period of the orchard or \$1,075.00 per year for 10 years, the whole time since the orchard was planted.

This was cherries, however, and as apples are under consideration I will confine my statements to apples.

In 1908 I had in orchard 1,300 trees from 10 to 12 years and they averaged about \$1.10 worth of fruit per tree.

In 1907, the year before, 1,000 trees averaged \$1.25 per tree.

But to obtain these results every year there are numerous problems to solve. There is the problem of distance apart to plant, of cultivation, of spraying, and of marketing.

The distance of planting whether to be 20 or 30 ft. must be determined. Here in Wisconsin where the winters are severe close planting has many advantages. You are doubling the income without very materially increasing the expense, a few more dollars invested in trees and a little more spraying—but very small items when compared with results. Wealthy apple trees will grow 20 ft. apart for 15 years without crowding. Then by careful pruning one can keep them from getting too close.

Cultivation also has a very important bearing on the profits. The manner of cultivation and expense involved. If there are tools that accomplish, by the aid of one man and team, the work of three men and team, better invest in the new implement and thereby accomplish the work in the shortest possible time. For often time is money on the fruit farm.

Now the problem of Spraying—How is a man to determine the profits of the spray. Perhaps the best way would be to take notes on an orchard not sprayed and compare it with an orchard where spraying has been thoroughly done and be careful not to form conclusions from careless or indifferent work.

For if the work is well done the results will be plain and the profits of the spray easily figured out.

The problem of marketing will solve itself if the fruit is well grown and carefully handled.

It is only by careful and thorough study and shrewd calculations that any business pays its profits and I can see no reason why thousands of acres of fruit land in Wisconsin can't be made to yield large profits to the owner.

DISCUSSION.

Mr. Geo. J. Kellogg: Would you confine yourself to Wealthy on that 10,000 apples?

Mr. Bingham: No, I would not, but I just took the Wealthy for the sake of argument. There are other varieties I think would prove fully as profitable in the orchard. The Northwestern Greening with me proves fully as profitable as the Wealthy.

Mr. Kellogg: That is the best thing I have heard of the Northwestern Greening this winter.

Mr. M. S. Kellogg: How many varieties would you limit yourself to, setting out a commercial orchard of upwards of 1,000 trees?

Mr. Bingham: That depends a great deal on my location. If I were to plant 10,000 fruit trees in Door County, I would plant largely the Snow, or McIntosh, apples of good quality, because I feel they are as much at home in Door County as the cherry, and we can grow them by careful work absolutely free from scab, and I see no reason why we cannot get a fancy price.

Mr. Bussey: You speak about the difference in appearance and cost of apples after spraying, can you get the full return of spraying by one season's work?

Mr. Bingham: I will give you one illustration. Two years ago this next spring I had occasion to buy a power sprayer, my orchard got too large for hand machines, investing \$150; I invested \$175 more in spray material and after those two investments I grew and harvested about \$1,400 worth of fancy fruit. There are orchards in our locality where there are trees twenty-five years old to thirty, the average is twenty-five

years for the whole orchard, and there would be a large crop of fruit, but it would be impossible to get a No. 1 barrel of apples and the whole crop would be sold on the twenty-five or thirty acres for less than I would get from a fifteen acre orchard which was sprayed and taken care of, and the difference in the age of the tree is to be considered besides, our trees are about ten years old.

A Member: You had sprayed them right along, every year?

Mr. Bingham: Yes, we spray every year. Scab and other conditions can be controlled in one year without any previous work but the second and third year you would get better results than the first.

Mr. Muhlenkamp: Have you used arsenate of lead?

Mr. Bingham: Yes, I used last year about 800 pounds arsenate of lead and I think it is the best poison we can get.

Mr. Muhlenkamp: Do you like it better than Paris green?

Mr. Bingham: Yes, I would not use Paris Green again if I could get arsenate of lead.

The President: I should like to ask Mr. Palmer to repeat his statement made sometime ago in regard to the profit on some varieties.

Mr. Palmer: Do you refer to the spraying I did for my neighbor this year? There was a neighbor who had I think six apple trees, I was going by there with a spray pump one day and he came out and wanted to know if I would not spray his trees, I said, yes, if we could get it in his garden I would. He said, "I have never had an apple on those trees yet," he had been there about twenty-six years, and I sprayed the trees for him and then when it came time to pick the apples, he wanted me to handle the apples for him and he had from those trees an enormous crop of No. 1 apples, just for the one spraying just after they were blossoming.

THE NEWELL APPLE, ORIGIN AND HISTORY.

WM. TOOLE.

To be brief, the Newell apple which was formerly known for some time in this Society as the Orange Winter, originated from seeds planted by Orange Newell in the town of Fair-

field, about four miles north of the city of Baraboo. The seed was planted about sixty years ago, and I find, as is apt to be the case, that the younger members of the family have not paid much attention to these things, so they cannot tell much of the history. Remnants of the old tree are still in existence. Several years ago some part of the tree was blown off, it made new growth from the trunk; woodpeckers built nests in the trunk, and the branches have sprung up from that and have born several crops of fruit since the main part was blown off. The first time that I can learn when it was brought to the attention of the public, Orange Newell brought the fruit to the Sauk County Fair. That would be somewhere in the 60s, probably some forty odd years ago. Anyway, when the fruit was first shown in public it attracted so much attention that a number of different persons were interested. Charles Hirschinger was one, and I will say our old veteran in horticulture who is gone, Mr. Tuttle, was much opposed to it, as much as to the Northwestern Greening and others, as it was not one he brought out.

Gen. Sholes was much interested and was perhaps the first one to get scions and plant trees in Baraboo and help disseminate it. Also some men in Richland County, but Mr. Hirschinger tells me it was not much disseminated in that country. A time came when it seemed desirable to make a change from the old name of Orange Winter to Newell, because of the confusion likely to result as between this and Fall Orange, and it was brought before this Society about fifteen years ago. I think that is all I can tell you in regard to the history; others can tell you of the quality.

Dr. Loope: I do not know very much about the Newell, although I have it. The only question with me in regard to the Newell or any other apple is, is it a success, commercially speaking? So far as my experience goes, I have never seen any evidence that the Newell was a success commercially, I mean that it is not prolific enough.

The President (Mr. Toole): The next point under consideration is "Its Value in Commercial and in Home Orchards."



Newell tree in foreground.



A corner of the Medford Trial Orchard, with Supt. Harris viewing the new fence.

THE NEWELL APPLE.

J. S. PALMER.

The Newell Apple seems to be at its best on rather light soil well fertilized. The tree must be well pruned and top well thinned to get best results. It is always a shy bearer with a tendency to bear a medium crop each year.

The tree is very liable to crotch and split down with wind. The apple is of good size, rather uneven and liable to crack and deform.

It is a fairly good keeper and stands shipping well. It has no place as a dessert-apple but for cooking purposes it has few equals among our Wisconsin apples.

Its season brings it in the market about Thanksgiving time when there is usually a good demand for this class of apples. With me it has proved a very satisfactory market apple.

THE NEWELL APPLE—ITS VALUE IN THE COMMERCIAL ORCHARD.

A. J. PHILLIPS.

In my opinion the Newell apple has no value in commercial orchards. Mr. A. G. Tuttle told me so before I set it twenty years ago on soil similar to his. Reports from the farm where it originated are more favorable. It had quite a run for a few years after Prof. Goff said at a meeting in Washington that it was the best all-around seedling yet produced in Wisconsin. Some years before Prof. Goff's death with him I visited C. A. Hatch's orchard near Ithaca and he showed us a bearing orchard largely of McMahan and Newell and Mr. Hatch said "Had I planted all McMahan instead of part Newell my returns in money today would have been four times as much." I have planted it on its own roots and have it bearing top-grafted but so far I never had a paying crop.

The best specimens of the apple I have seen were exhibited at Minnesota in 1907 by A. D. Brown of Baraboo. The Newell is a failure at Wausau and in my travels I have never seen it in an orchard where it was a pronounced success as a commercial apple.

OTHER OPINIONS REGARDING THE NEWELL.

Mr. Bingham: The Newell, as I have observed it, for the last seventeen years is an apple that has no place in the commercial orchards of Wisconsin. The tree is the poorest of any of the varieties that are growing in the State with but very few exceptions. I have only grown it in a limited way. Of the trees I have, there is perhaps but one tree that is not broken down from the effects of winds or a moderate crop. As Mr. Palmer says, it is inclined to be an annual bearer, needs a great deal of pruning and the way it branches is so poor that a man has to be an experienced orchardist in order to keep the trees in shape so that a moderate crop will not break them down. It is not a good commercial apple, that is, on the market, it is not the right form, it is an ugly shape, inclined to crack and to be one sided, and the tree is a failure and the apple is of poor quality. The only good quality I know of is that it is a fair cooking apple, but it is a poor apple fresh and I think it has no place in a commercial orchard in Wisconsin.

Mr. Chapple: I want to say a word or two, as I have been an orchardist and nurseryman for a good many years, and have had quite a little experience with the Newell. It is true in growing a nursery we should be very careful not to let it crotch, keep the branches thinned in the young tree while growing and we can shape it so that there is no danger of its splitting down with wind, and it is an apple that sells well, if you keep it thinned enough. Mr. Tuttle said that the Newell was a seedling of the Perry russet, and I have always understood so. Now, this is my experience, and I think if it is properly grown in the nursery, that it is a very good tree.

Mr. L. H. Palmer: I have grown the young trees and I have had splendid success with the tree, it has grown well and I have got good apples, but as the trees get older they seem to be shy bearing. At first they bore heavily, but in our local market there is no apple that I raise that is in such demand

as the Newell Winter; people call for it and want it. It is a shy bearer as it gets older with me.

Mr. Muhlenkamp: I find it the most profitable apple I am growing. I have not missed a crop since they commenced bearing. It is inclined to split anyway, otherwise with good culture I find it by a good deal the most profitable apple I am growing.

Prof. Sandsten: Dr. Loope has just said to me, "it is a case of the old story, one loves the widow, another loves the daughter." So it is with an apple, one man likes it and another does not. If a man likes it, it does well; and with another it does not.

The President: To some extent it is the case also that with those who think well of a thing it is apt to do better for them. The Newell apple has the fault of the Perry russet and others, that it will wilt in high temperature, but there are many people like myself who think very well of it and like the peculiar flavor of the Newell, and like it as a dessert apple and it holds its condition a long time in the winter time if properly cared for.

The Secretary: Inasmuch as this discussion of the Newell apple must go on record, I think some explanation is due from members of previous trial orchard committees to explain why they selected it as one of five to plant in the Southern trial orchards.

Mr. Bingham: If that apple is on the list of trial orchards in Southern Wisconsin, it must be that the committee out-voted me.

Mr. Coe: If my memory serves me rightly, the Newell apple was planted, not in all the trial orchards, but in the Gay's Mill orchard, because it seemed to do particularly well in that section of the State. People who had known it and grown it in that particular section thought that it ought to go into the trial orchard there and that is one of the reasons it was put there, but in the trial orchards, as a whole, you will not find many Newell apple trees.

The Secretary: That is the explanation I was looking for, that clears up the situation. The Newell is not planted to any extent in any other orchard than the Gay's Mill orchard, which is in Crawford county, adjoining Richland county, where we

understood the apple originated and where it appears to do very well, in fact, it seems to be one of the best apples in that section of the state, in spite of all that has been said against it to-day and we placed it there as that was its original home.

Mr. Bingham: My first experience with the Newell apple was in Richland county, on the high ridges east of Richland Centre, and there in some localities the Newell apple did pretty well. C. A. Hatch had a good word to speak for the Newell, because he could grow it in certain locations, they were of fairly good form and the trees kept their shape and did not break down. Mr. A. L. Hatch whose farm was almost adjoining, had nothing good to say for the apple and he was always disgusted when he came around to that batch to harvest the crop, because he got a low percentage of No. 1s, the percentage I think would be about 25 to 40 per cent No. 1s, and the rest culls. That is my experience, and I have seen it in orchards where it has been grown for a number of years.

Mr. Geo. J. Kellogg: I do not know much about the Newell for bearing, in the orchard it is apt to blight unless it is on high ground and free circulation of air, and it would bother us in the nursery a great deal. It needs an extra amount of pruning in the nursery to put it in shape for a twenty-five to fifty-cent tree. Now, in regard to the keeping qualities of the apple, I bought two barrels of Mr. Hatch when he was in Richland county, I thought it was a nice winter apple and it kept until the first of November.

Mr. E. A. Smith: The Minnesota Horticultural Society at their meeting in December recommended this for trial in orchards in Minnesota. Our own experience, having tried it several years ago, was that it was not very satisfactory and we discarded it, but now that the Newell seems to be getting more or less in favor, we shall endeavor to give it another test.

The President: I will now call on our neighbor, Mr. George Tippin, Secretary of the Missouri State Horticultural Society.

Mr. Tippin: Mr. Chairman, Ladies and Gentlemen, if it is permissible to digress before taking up my paper, I will endeavor to impress upon you two facts in connection with the last two subjects discussed. The first thing to determine in the matter of pruning is what you are pruning for, whether

wood growth or to thin out your tree for sunlight and air or to induce production of fruit buds. This last discussion has forcibly brought out this valuable point in the growing of apples—know your soil. The Newell apple that you have been discussing may do well on a good soil and within one mile from that place may not do well at all. What is true of that apple is true of many others and many other varieties of fruits. As an introduction to my paper, Mr. Chairman, I believe I had better make a few statements. The paper is short and I am not going to say it is an important paper, but it is upon an important subject and I found it would be too lengthy to go into details, so I have undertaken to set out as forcibly as I could some of the most important reasons why co-operation in the marketing of our fruit crops is necessary, leaving the matter of detail to be worked out by local associations or societies and through discussion.

CO-OPERATION IN MARKETING FRUITS.

GEO. T. TIPPIN, Springfield, Mo.

The subject of marketing covers a wide range and many details and points of interest enter into its final successful consummation. The question of marketing is a most important one with the fruit grower. We are confronted with a condition and not a theory and one that must be solved if there is to be any profit in growing fruits, especially apples, and at the same time not forcing prices too high for the consumer by intervening expenses. How to do this is the question involved in my subject. There are obstacles in the way that must be overcome in the solution of the problem and conditions that must be improved. In discussing the subject of marketing, it is vitally important that the responsibility of all the parties interested be pointed out including the growing, the packing, the transporting, the distributing, the marketing. To start right, we as growers must not shirk our responsibility. We must grow good fruit before we can pack good fruit. We must pack good fruit in an honest way so that the marks and grades put

upon the package represents the contents, before we can become strongly entrenched in defence of our rights in consideration of all the elements and interest that must necessarily enter into the final analysis of the question of marketing. I cannot take time here, nor would it be proper to discuss how to grow and pack, but as these two are initiative points of great importance in the subject of marketing, they deserve the close observation and study of every fruit grower who expects to successfully market his fruit. In discussing the question of transportation and its relation to the question of marketing, I do not desire to create the impression that I believe all the rates are too high, or that as a whole, the railroads are charging too much, but that the fruit growers of the country are paying a rate out of proportion to other commodity charges. There is no reason why a shipper of apples should be charged double the rate that is charged on other commodities that are more perishable than apples and the average value per car more than double that of apples and yet this is done, and because of the perishable nature of our apples, which is plead by the railroad companies as a basis of excessive rates, we oftentimes have to ship in disabled stock cars and box cars with no doors and leaky roofs. In adjusting the question of rates, the most formidable obstacle to overcome is the power of injunction exercised by the Federal Courts to prevent State Officers from enforcing just rates within the States—I am aware of the awe with which the average man looks upon a criticism of the action of a Court, but it is not beyond the memory of men of my age, much less many of you who are older, when court decisions were rendered in the interest of a Bond System and extension of Bond territory, when the Bond was black and in the form of flesh and blood. Such decisions in favor of special interests proved the last straw. Today the Bond is white and written upon paper representing over capitalization of the great arteries of trade to the alarming extent that when a State, by any act of Legislature and an order of its Railroad and Warehouse Commissioners fixes a rate on fruit within the State, although more than double the maximum on rate commodities no more perishable and less risk, they are enjoined by the Federal Court on the ground that it is confiscatory and unreasonable. In dissenting from decisions of the Federal Courts,

we do so without criticism of the Court as an institution appreciating the far reaching necessity of this co-ordinate branch of our Government, but recognizing the inevitable truth that all men are only human and that a man, though sitting upon the bench, is subject to environment and associations with which he is surrounded and of which he becomes a part by contact. Such has been the history of the world. In that memorable debate between the Immortal Lincoln and Stephen A. Douglas, only fifty years ago, a supreme court decision was the main contention between these two great men, Douglas taking the position that a man had a right to his opinion and to defend the same before the courts but that when the court rendered its decision the individual or community should have no further rights in the matter. Mr. Lincoln said that the citizen or community's rights did not stop with the court's decision, if such decision was against the spirit of the constitution which guarantees to every man equal rights under the law and protection in the profits of his labor. Lincoln was a progressive, Douglas was a "Stand Patter." A real "Stand Patter," is the fellow who is looking after the interests of those who are unjust beneficiaries of unrighteous policies, consequently when the Missouri Apple Growers protested against paying the Railroad Companies 85c per barrel for hauling it 300 miles while the grower only got 60c per barrel for the apples picked and put on the table the Federal Court enjoins the state government from even reducing the rates so the grower would get as much as the transportation people. Some may argue that this does not come within the scope of the discussion of the subject of markets, but let us see. That there exists today an expense between the producer and consumer which must either force down the price to the producer to cost of production or below, or force up prices so high to the consumer that consumption is destroyed, no one will deny.

If the problem of how to reach across the span between the producer and consumer was solved as far as getting our products to a given section of the great consumptive body is concerned, and the price made to the consumer is beyond the reach of the masses, we have accomplished nothing in our own behalf, for the market is destroyed, but have contributed to the intervening unreasonable profits which are an estoppel to con-

sumption and thwart the very object we seek to obtain. So long as excessive rates on fruit products form a large per cent of the expense that make the reach between the producer and consumer unsurmountable and so long as we are charged 30% more on car lot shipments for a distance of 250 miles in the direction of our natural markets than we are for 1,000 miles in the direction our markets do not lay, I must contend that the question of rates and court injunctions enter materially into the discussion of this subject. Other obstacles are to be overcome if we are to reach the unsupplied markets or are to create markets by facilitating a demand among which are the unreasonable profits insisted upon by those who handle our products, especially our retailer, I am also aware that in discussing this phase of my subject that some one will differ with me if on no other grounds than the claim, we are antagonizing one business interest in trying to protect another, which claim is liable to be supported by the newspapers of the cities because the retailers are good advertising patrons of the press, but remember we are justifiable in pursuing any honorable policy to establish one business upon such basis and upon such relation to the trade as will insure a reasonable profit to us and at the same time place our products within the reach of the consumer at a price that is not prohibitive. If in working out our plans to reach the unsupplied markets and creating markets we are forced to run counter to some other interests, we do not do so out of a spirit of antagonism, but for self protection by applying the same rules of trade that are practiced by other large productive or manufacturing interests. We are only manufactures, and if we cannot manufacture our goods and put them upon the market at a price that will insure consumption, then we must quit. If we are not succeeding in doing this, shall we make the effort? Let me assure you that we have nothing to lose in the effort, for the masses whom we desire to reach will not be prejudiced against us in our efforts to get to them with our products upon a basis that will guarantee to us a profit so we can continue in the business of producing healthful fruits for their homes, at the same time allowing a reasonable profit for handling and not putting the price beyond their reach as consumers.

There exists today, between the grower and consumer of

apples, an expense that is prohibitive to consumption even when the price to the grower is only one dollar or less per barrel for the fruit. In August, 1906 the jobbing price of apples on the market was \$2.25 per barrel in St. Louis. The retailer was charging 40c per peck or \$4.80 per barrel, a profit of \$2.00 per barrel after allowing 55c per barrel for shrinkage which is 25% of the cost price and a liberal allowance. In December, the same year, I made inquiry in another city of railroad men, of what their families were paying for apples. They said 40c per peck. At that time in that city the jobbing price was \$2.25 per barrel. At 40c per peck, apples are a luxury to the masses. At 25c per peck, they are an available healthful food product and consumption would be increased ten fold. We cite another case in proof of this contention. During last winter at a certain town in Iowa, three retail stores were handling apples, retailing them at 50c per peck and did not sell an average of one barrel per day for each store, and that in a town of 1,200 people. A dealer decided to ship a car load of apples into this town. He got busy with the 'phone not only with the town people, but the farmers in the country, told the people that on a certain day he would have a car load of apples and would sell them at \$3.00 per barrel. The car arrived and he sold 100 barrels in one day. Soon sold the car out and ordered several more cars. In my home town, Springfield, retailers charged that winter, 50 to 75c per peck for apples that cost them \$3.00 to \$4.00 per barrel and not one-fourth the apples was consumed that would have been if they had been retailed at 35 to 50c per peck, which price would have yielded a profit of \$1.00 to \$2.00 per barrel to the retailer and for which he should be satisfied. In justice to the retailer and in order to have his hearty co-operation in working out this problem, I again call to your attention the question of packing. The growers must put up straight honest packages. What ever grade of apples the barrel or box is marked it must be that, so the retailer will know that if he undertakes to handle apples on a reasonable profit that his profits will not be wiped out by shrinkage on account of poor packing. It might be well to add here too, that the retailer's shrinkage is often due to his keeping apples too long on hand by reason of his asking too great a profit. The people

of this country will consume as large a crop of apples as has been produced when properly distributed and at a price that will pay a reasonable profit to the handler, and \$1.00 per barrel to the grower for the fruit on the packing table, and with short crops at better prices, the same with all other fruits. The greatest commercial achievements in this country for many years have been through organized efforts. In recent years the most successful fruit and truck growing and marketing has been in those sections of the country where organization is most complete. The old proverb "In union there is strength" applies with more force to no industry than it does to agricultural and kindred pursuits. The first essential in successful fruit growing is a proper knowledge of varieties and kinds adapted to the locality, and of the care and cultivation best to the soil to be planted. Second, a knowledge of the best methods of treatment to insure a perfect product. Third, a correct knowledge of the proper time and the proper way to gather and pack. Fourth, of the best methods of marketing, which in my opinion is most important of all. We may successfully grow, gather and pack and yet sacrifice all by not understanding how, or not being in position to profitably market our crops or products whatever they may be. By organization through which a community have all learned to grow and pack the same grade of fruit or to produce and put up the same class of goods, a greater inducement is offered to buyers and better prices can be obtained as a rule than by operating individually. I would be glad to see the fruit growers in every section of the country organized into local societies. The local organization could then be made the unit from which a more extended co-operative and concerted movement could be formed having for its sole object the proper distribution of our large crops. This, in my opinion, will be especially desirable and necessary whenever we have a general apple crop throughout the United States. I do not mean the formation of an organization to take charge of and sell the apple or other fruit crops of the country but that through a co-operative effort a plan may be involved that will be an instrument through and by which each association or individual can market their apples and receive the same benefits and at the same time have full charge of the sales of their products whether it be on the

track or in the market to which they have shipped. By organization and co-operative efforts the expenses of marketing could be minimized so that shipments of thousands of cars could be made to unsupplied markets direct, and be distributed direct to the people of the smaller towns and the agricultural mining and lumber districts, thereby cutting out the expense of at least one local shipment, also one or two profits. By organization and co-operative effort, this condition can be brought about, in my humble opinion. Through organization a power could be delegated to authorized representatives who would formulate plans to this end. I believe if it was put up to the jobbing trade in our large cities in a business like way, and they were made to realize that the producers must have some relief in this direction, their co-operation could be secured in regulating the matter of prices to the consumer. I would not want to antagonize the jobber or the retailer, and would recommend that an effort be made by co-operating with them to regulate prices on a reasonable profit basis. Failing in this, the only thing left to do will be for the apple growers of the country to establish apple depots or market houses in the large cities where the consumer can buy direct from the producer.

Through organization, the producer of apples and other fruits can incorporate into his business the same commercial methods that form the larger part of the success of most successful commercial industries of the country, and much can be accomplished both in reaching the unsupplied markets and creating markets to be supplied. Manufacturers fix the price of their products which they are enabled to do because they are well organized. The fruit growers should organize as far as they can. The strawberry growers are pretty well organized in the large berry growing districts. The peach growers of the South are making rapid progress in this direction. California and the North West is perhaps the best organized of any other section including the apple growers of the North West. Every county in the apple growing sections of the U. S. should have its local organization through which the matter of packing and fixing grades, the buying of packages and other necessary materials, the matter of rates, etc., could be looked after and by which you can command a greater attention of the buyer and in case you are not able to sell at satis-

factory F. O. B. prices collectively, you can send a man to the markets where individually you could not afford to do so. Just in proportion as strength is added influence increased and expense minimized by co-operation through a local association does it increase with its extension. The question of proper distribution which is a most important one in marketing our fruits when we have large crops can only be worked out through co-operation. If New York, Ohio and New England states were formed into a group, Iowa, Minnesota, Wisconsin and Michigan, a group, Indiana, Illinois, Missouri, Arkansas, Kansas and Nebraska, a group, and the North West or Mountain states a group, these several groups could be represented in an executive board authorized to perform the service for which such board is created. The compiling accurate crop reports, distribution and securing proper adjustment of rates would be a special part of their work. In case of short apple crops as in the past two years, this extended co-operation that I have pointed out would not be so necessary, but when we have general apple crops in this country, the value of its service would be inestimable.

DISCUSSION.

Mr. Hey: We are living in a town of about 10,000 inhabitants, with no fruit organization, and it is difficult many times for us to market our fruit, although the fruit grown there is in such small quantities that we do not know how to get an association started, and I am looking for information.

Mr. Tippin: It is very easy to organize your local people into an association. I had laid aside a copy of the by-laws of one of the first associations in our sections to bring with me, at the request of your Secretary, and forgot it at the last moment, for which I am very sorry, but I can give you in brief detail perhaps the most essential points in the question of your local organization, by stating the objects of it. In the first place, fruit growers organize into co-operative societies or associations for the purpose of facilitating markets and marketing their stuff. Now, take my home town, for instance, at

Springfield, we can market a great many berries in that town in our home market, but we found years ago that we were growing a surplus and we found when we marketed all our berries there, we got no profit out of it, so we organized a shipping organization, elected our board of managers and our secretary and our treasurer and when we have supplied our home market, we load the surplus in the cars, and by putting these all together, we could make up carloads and ship to the distant markets, thereby protecting the home market. Now, when we commenced, the manifests of the cars were made up and each man's berries were sold on the merits of the fruit in the home market and returns made to him direct, because we were not experienced in packing, and had not learned what we were able to learn through co-operation, but after we had been organized a short time, or a few seasons, we adopted our rules for picking, rules for packing, grading, everything is set out plain so that each one can understand, and the result is that we were soon all packing the same grade of stuff; the car load is made up and simply manifested as fifty crates, or 100 crates, as the case may be, and the car shipped and sold and the pro rata sales made back according to the number of crates they have, because on that point it is impossible for a commission house to sell a car load of berries made up of perhaps 150 shippers which has got to be sold from five to seven o'clock in the morning and keep an exact account of each individual lot. They do it the best they can, many of them, but they cannot do it perfectly, so you see the necessity of learning to pack your stuff at the time right, that is why I make the point in that paper, that one of the fundamental principles of solving the problem lies with us and we must not seek to shirk our own responsibility and lay it upon others. I remember I have packed apples in Southern Missouri in the fall when it was a little warm and apples were not first class apples, that I would have made an affidavit ten days later that I never saw those apples. That is the principal object of your local organization. One other point is of special interest that I simply alluded to, that is a matter of markets. For instance, that you have not an opportunity to sell your stuff on the track and you have got to consign it. Well, of you are working in a co-operative capacity, and you are not well established in the

markets and have not got your connections formed that you can put the confidence in that you would like to, it does not cost much to send a man up there where you are shipping it to to look after it. We know there are some as honest men in the commission business as in any other business, and also some of the biggest rascals in the world that are in the commission business. But that is not their fault, it is our business to look after our own business. The fruit grower must learn, that he must look after and attend to his own business. We are the most careless people in the world. There is not an industry in the United States representing such a vast amount of business and wealth as ours that is handled on such a slipshod basis as is our business and we are victims of every scheme that comes along. Now, the question of selling on the track, which I simply referred to in the paper, encourages all men to grow and put up the same kind of stuff, put up the same grade of apples. Take a section in Wisconsin where you ship by the car load, if you growers stick together, buy your packages together, your fertilizers, everything else, you may make quite a saving in that. You do that and require every man to pack to a certain grade. You know a buyer who comes into your community will pay more for your apples on the track than I could afford to pay Smith and Brown and Jones or anybody else that does not know how to pack, or does not pack by any system, and these advantages multiply as you get into the subject and you will find it that way whenever you undertake it. I think I am justified in saying that in all the apple growing or berry sections, co-operation is the most important thing we can do. I really believe down in the southwestern part of Missouri some of our associations sell all their strawberries on the track.

There is this question involved in the handling of strawberries that is not involved in the handling of apples, because apples are not so perishable and that is why we have differences of opinion in the great strawberry growing sections as to the best way of marketing the stuff; some are in favor of track sales, they say they will sell on the track at some price, others will not sell anything on the track. I just refer to the point that causes this difference of opinion. If berries are always in good shape, the weather is dry and favorable for harvesting

at picking time and they show good carrying qualities, it is not much trouble to sell in car lots f. o. b., because there is not too great a risk to be taken by the buyer, but if the weather is unsettled and we have too much rain, they are watersoaked and there is danger in their carrying qualities, the buyers will not buy them unless they can buy them way down below the point of risk. Now, the Association that insists upon selling to the trade during the good season, are at a disadvantage to the Association that consigns all the time—remember, human nature is alike everywhere. We have a commission firm, say in St. Paul, that has an account down there, an association shipping 100 cars of berries a year, this association comes with their berries straight along, they have a business contract, they expect their supplies to come from that association all the time, they start in the beginning of the season and they give that house its berries regularly, every day, regardless of conditions and price, as a result of giving the house the account while it is worth something to handle, when the deluge comes, the flood, and the berries are tender and soft, that house, if it is human at all, feels under obligation to put forth every effort possible to take care of those people under those conditions, and they do it. While, on the other hand, the association who has forced that market to buy when conditions were so they could do it, and the storm comes and then they are forced to consign wherever they can, they are simply put upon the market for what they will bring, they will turn them loose and get what they can out of them. I know of one firm in Neosha county last year, there came a wet spell, they at their own expense hired girls to re-sort every grade and help pack them in order to get enough out of them to pay expenses, if possible. They would not have done that if these berries had been consigned to them by an association that would not ship to them unless they had to, or shipped to them stuff of no account. That is a matter of detail for you to work out. I will say this,—if you will organize in your berry districts and in your apple districts along the lines I have suggested, it makes but little difference whether you sell on the track, or whether you establish your connection with responsible, reliable firms in the market and stay with them and make your grades and marks stand for what they represent, and you will succeed. I have no patience with

the idea of over-production and all that kind of stuff; the time will never come in this country when good fruit, properly packed, will not bring a profitable price.

A Member: The gentleman that just spoke seems to me made a wrong impression, if I got the right understanding; he said something about the retailers in selling apples, that in a great many places they get too large a profit and I believe he said in some instances that was something like \$2.00 a barrel. Now, he spoke of getting apples by the carload and selling them out by the peck. Now, of course every one will understand that it costs more to sell those apples or that fruit by the peck than by the barrel. Now, the question is, is that generally the case that there is that much of a profit made in retailing apples throughout the country, are not those very rare cases?

Mr. Tippin: No, sir, that is generally the case, that is general all over this country.

Mr. ———: Well, I am in the business myself, I am interested in this. Now, what is the best thing for a merchant to do? Is he to buy from the grower to get his apples at the right price so that he can retail them at the price you name, or can he do it just as well through the commission house?

Mr. Tippin: That is the point I will say we are going to work out. It is simply this, if the jobbers, that is, the wholesale men, are willing to co-operate with us, and I am satisfied they are, because I have carried this investigation to some extent, they will go to the retailers, and say to them that this expense between the grower and the consumer has got to be reduced, and it is up to us to do it, now, if you are willing to take this stuff and handle it at a reasonable market price, we can continue to handle this stuff in a wholesale way, but if you are not going to do it, the growers will get together and shut us both out.

Mr. ———: Then somebody else must be making the profit, as far as my own experience is concerned. I am not so situated that we get apples from Missouri, most of our apples come from the East, from New York, but supposing the basis is \$2.25 in New York, or \$2.75, if we pay 75 or 80 cents freight at New York and lay the apples down at \$3.10 and we ask \$3.40 or some such thing, that would not be unreasonable.

Mr. Tippin: Oh, no.

Mr. ———: Evidently somebody is making a profit outside of the retailers. I believe it is the man before you get to the retailer that you want to get after.

Mr. Tippin: Take one case that I cited in Springfield, Mo., that was a year ago, in 1907, apples were very high, in the fall they started out at \$3.50 a barrel f. o. b., the retail price was fixed at 50 to 75 cents a peck in the city and when apples went down in February and March, so that they could buy the same apples at \$3.00 a barrel, they kept the retail price the same as before, and the result was that the market was destroyed and apples perished by thousands of barrels just because they demanded that unreasonable profit. As a general proposition, this condition prevails throughout the United States, and we as growers have got to take hold of the question ourselves, it has got to be solved.

A Member: That has been the case in our part of the State; we have looked into the matter quite often ourselves and we have always thought that the commission man is making too much of a profit.

Mr. Tippin: I will say this, and I have been in the trade ten years, the average profit per barrel for ten years for apples handled in the United States has been less than 50 cents a barrel.

Mr. ———: Well, of course, I want to inquire for information and if it is better to deal with the growers straight, why, that is the one we want to deal with.

Mr. Tippin: You misunderstood me, I did not intend to convey the idea anywhere, if you please, that the grower was to sell his stuff out by the peck to the consumer.

Mr. ———: You stated, though, that in fixing the price, to set it at 40 cents a peck and more people would buy apples at 40 cents a peck.

Mr. Tippin: If the jobber and retailer are not willing to meet us half way in this proposition in any way to get it in proper shape, we will get it to the consumer so he will buy bushel boxes and barrels instead of buying at 40 cents a peck, so that he can give his children apples.

The Secretary: Mr. Tippin, I want to ask a question or two. First, if you can tell us roughly what the price of apples

may be now in the wholesale market, Greenings and Baldwins, standard varieties, at what price they may be furnished to the dealers?

Mr. Tippin: St. Louis prices now are running from \$3.75 to \$3.50, good apples, according to the varieties, up to \$5.00 a barrel, at St. Louis and Kansas City.

The Secretary: With all due respect to the grocers of Madison, I know most of them, and I am quite certain that they are honest men and not intending to cheat us, but the retail price of apples in Madison now is 60 cents a peck.

Mr. Hanchett: I have been very much interested in Mr. Tippin's paper and his talk. As President of the Sparta Fruit Growers' Association I want to say "Amen" to every word he has said, and I want to say that we have arrived at the point in our business experience where we feel that it is necessary for the different fruit growing sections to join hands on this proposition of transportation, also of getting the raw product to the consumer at the least possible expense. We have felt that with the city of Madison right near us, where we could not get the retailer to give us a price for our product which left any profit to us whatever, the consumer was paying for strawberries from 15 to 20 cents a quart throughout the season—that it was going to be necessary for us to put in a retail fruit stand in the city of Madison to handle Sparta fruit. We might not make it succeed, I have no doubt the retailers would jump on us, drive us out, but we would certainly be able to learn a little something about getting our product to the consumer, and I think that the method of taking it up with the jobber and through him with the retailer would be the more practical method, but as fruit growers, we must give the dealers to understand that we will not furnish them with fruit unless there is a profit in it for us, and that we want the fruit to be placed before the consumer at a price which will encourage consumption.

Mr. Burnham: I had a little experience in marketing apples this last fall with early apples, Yellow Transparent. I could not get an offer for them, our whole market was overstocked with windfalls, etc., selling at 25 cents a bushel. I packed Yellow Transparent that weighed about 42 pounds to the bushel and shipped them to Milwaukee, and they sold for

75 cents. That fall, when the Duchess came in, a man came over and wanted to buy, he said he would pay 80 cents a hundred for Duchess. This man wanted to buy Duchess and ship them to Minneapolis, in car-load lots, in bulk, to save barrels, he was paying 80 cents a hundred at that time. I would not sell mine and I packed them in small boxes, about forty pounds to the box, and shipped them to Minneapolis, and they sold for a dollar a box, readily, freight was rather high, about 41 cents, and the commission was ten cents a bushel. Newhall Brothers bought these apples from local dealers at 25 cents a bushel and I got at least 75 cents for mine by shipping to Minneapolis.

Mr. Tippin: Just one word on that point. Now, that meant to do something that every one of you would do if you were going out to buy anything, corn, wheat, cattle and hogs, he would buy it just as cheap as he could. Was it that man's fault? No, it was the grower's fault, because he was not posted. Now, if you will organize, and let me tell you, the best apple statistics gathered throughout the United States have been gathered through organization of the growers. It is better than the government report. I want to say to you that I, as a buyer, if I were buying, would rather employ the means I have at my command, than to take the government report of apple statistics. Through these organizations you have the means of knowing what the apple crop is and what the price should be, so when a man comes along and offers you 25 cents when the price ought to be 50, you ought to tell him that you are not ready to sell.

Mr. Burnham: Mr. Hatch, who had an orchard over on the East Ridge, in connection with Mr. Ries, sold his apples to a Madison man, I think he was a peddler, selling his apples from the orchard for \$2.40 a barrel for No. 1s, and 25 cents a bushel for windfalls. They had some little trouble, they did not take the apples as fast as Mr. Hatch wanted to deliver them, so Mr. Hatch had to stop shipping any more, and he went to see how they came to Madison. Now, Mr. Hatch's was an old orchard and bore very heavily, these trees that bore at all, and there were piles of windfalls; he learned that when they came up here to Madison they were re-packed and the windfalls packed in with the others and sold in Madison for

\$3 a barrel. This same man came to me, who had been getting Mr. Hatch's apples and wanted to know what I had. I had about 50 barrels of Wealthies and McMahan in the cellar; he said he would pay \$2.25 a barrel. I would not sell them, because they were much better than Mr. Hatch's; mine was a young orchard and the apples averaged about one-half larger. I said, "How can you buy Mr. Hatch's apples at \$2.40 and only pay me \$2.25 for better apples?" "Well," he said, "I do not make my money out of the \$2.40 apples; I make my money out of the windfalls." I afterwards sold those apples for \$2.85 a barrel, and just as soon as they were gone the local dealers had to ship in apples right along.

The Secretary: I am glad that Mr. Burnham made that statement. I do not want to accuse the grocers of Madison of overcharging us; I am not sure that they do. I know nearly all of them and many of them are my friends; I know that none of them are getting very rich, I know every once in a while one of them fails in business; but I know on the other hand the growers of Wisconsin have gotten in the neighborhood of fifty cents a bushel for their apples, and we in Madison have to pay fifty cents a peck. There has been no time in Madison since September when apples have sold for less than 50 cents a peck and up to 70 cents a peck, and I know there are hundreds of people in Madison well-to-do, not poor people, but people fairly well-to-do, who cannot get all the apples they want. A man said to me the other day, "I suppose I am considered in fair circumstances, yet I cannot buy all the apples that I want to buy." I simply say there is something wrong somewhere; times are out of joint when those things prevail.

Mr. Pelton: I calculate we had better get out and hunt a market ourselves; that is what I have been doing the past thirteen years. I went and hunted my own market, showed my fruit and I sold my Duchess and summer varieties so they have netted me about 80 cents a bushel. I can get \$1.05 a bushel for them at retail.

Mr. Tippin: I beg pardon for getting up again, because all this discussion is leading up to bring out the fact to manifest to you the necessity of co-operation on the part of fruit growers, and to take care of this gentleman, or two gentlemen who

are isolated so that there are only one or two in a county,— if in some section of any county there are two or three people, or over the county line there are three or four good growers that cannot have an association, whenever you have perfected your plans of co-operation in marketing, you can take care of those fellows, you can keep in touch with them by correspondence, tell them whom they can ship to in the market if they want to ship direct, or you can find a way to take care of them. One point on those different prices that this gentleman had on those apples. Speaking from ten years' experience in almost every fruit state and section in this country, I believe I will be justifiable in making the statement that he was caught on the hook of a high market quotation. It is lamentably true that the average man who has not gone through these experiences himself will be caught by a high market quotation and he ships his stuff and he gets nothing out of it, and he turns at once to the oldest old rule, you have got to blame somebody else for your own mistake, that is the whole thing in a nutshell. I will venture to say that nine out of ten of the growers of the country who have not gone through this experience that you have been talking about to-day will ship to a man who quotes a high market, whether he knows anything about it or not and when he gets his returns he brings himself to believe that he absolutely has done his duty, the other fellow is to blame entirely. That shipment to Milwaukee, no doubt that sale was a fraud. Now, it is to overcome those very things that we are talking about co-operation, those very things exactly. If you are organized and conditions arise that you have got to go into new markets and new territory through your collective organization you are able to send men there to look after your shipments if you have got to consign. Attend to your own business, like every other business interest; of course, gentlemen, we will find that these objections will come up, but things at last resolve themselves down to this, let us apply to our business the same business principles that every large commercial and manufacturing interest of the country do and we will succeed. We are going to run counter to somebody, we cannot help it, but that is not the question. Self preservation is the first law of nature and I contend that it there is any man on earth that is entitled to the profit of his

labor it is the man that applies his brain and brawn to the earth and brings forth that healthful fruit that blesses the Nation and makes health possible.

Mr. Smith: Which do you recommend, the bushel or the barrel package?

Mr. Tiffin: That depends on the fruit. My opinion is that the bushel box is coming to stay and will grow more popular every year, and we will succeed better by packing our strictly No. 1 and fancy fruit in bushel boxes. Let me illustrate that, this is an important question. I cannot see any use in spending our time in learning how to plant, cultivate and grow all those things and then sacrifice all the profit when it comes to market. To-day the best apples on the market are bringing around \$5.00 a barrel, that is what you call fancy apples, while fancy box stuff is bringing \$2.50 a box, wholesale, that is \$7.50 a barrel, therefore it resolves itself into this, the three boxes will not cost you more than perhaps two or three cents more. The question is, whether we will take \$5.00 to illustrate, for a barrel of fancy apples, or get \$7.50 at wholesale when packed in bushel boxes, that is simply an illustration, those prices will not always prevail, but the corresponding difference does prevail as a rule. Another thing, the disposition of the consumers is more and more to buy what they consume in the original package. This is manifested by the fact that almost everything that we use now from the grocery store is put up in packages that we take right from the shelf and take it home and that idea is gaining with the consumer of apples. There are lots of people who will buy a bushel of apples in preference to taking half a bushel or a peck out of a barrel that has been handled over and part of it left and thus encouraging the original package, and I think that is a good idea to keep in mind, to get the stuff to the consumer in the original package as much as possible. But it will depend on the quality, it will never pay to take what you will call orchard run straight, pack No. 2 in boxes, because the labor cost is too great.

Mr. L. H. Palmer: My brother and I have had considerable experience along this line. We have shipped from five to ten cars a year of apples; we make it a point to find a market; perhaps we will find three or four markets. We aim

to find the best one, we calculate to post ourselves as to whether that market is all right. We have been let down a little bit once or twice, but as a general thing we have succeeded in marketing our apples at the market price at least. It has gone that way, we have never found a place where we could not get rid of our car-load of apples yet.

THE ORCHARDS OF WESTERN NEW YORK.

PROF. W. J. HAMILTON, Two Rivers, Wis.

In a discussion of so broad and so well known a subject as the one assigned to me, it is impossible for one to give much in the way of new or startling information along the ever broadening lines of Horticulture. For this reason it is my purpose to merely mention a few of the features of tree culture common in the state of New York where I spent my boyhood and where as a farmer's son I learned many of the interesting facts of practical horticulture.

I am believing it is always a wise plan to make a comparison of methods along all lines. It is a well known fact that no one head nor collection of heads however wise can know and control all the wise and practical things especially in the applied arts and practical sciences. The nation and the individual who will learn from others with whom contact is made, is the progressive factor in our civilization. Hence I am hoping it may be wise for us to spend this short time in the comparison of eastern and western methods.

Unfortunately it is a common thing for people of the east to look upon the neighbors of the west as a certain unstable quantity while we of the west return the compliment by considering the farmer of the east as belonging to an ancient phase of civilization, scorning all things which make for progress. As a young man coming to Wisconsin I had great hopes of seeing the wild and restless Indians and had in mind the encounters with the timber wolves of which I had often read. And so today I find people in Wisconsin who look upon the

people of New England and New York as belonging to a class set-aside, if ever, seen off the stage. A class of farmers and hill people who believe the earth to be flat and who are afraid of the cars. This is of course somewhat overdrawn but what I am trying to bring out is the fact that we as a people can gain much one from the other were we not to believe that our own methods and our own conditions are superior to those of our neighbors. The east can learn of the west when it comes to fruit growing as well as the west learning from the east. I would not presume for one moment however that it is a wise plan to adopt the plans and methods of eastern fruit growers to the western fields as every practical man knows that what may prove a great benefit in one section of the country may be a gross mistake in another section. The wise plan is to study methods and then adapt those most satisfactory from careful experimentation.

As to the fruit growing industry in New York, we are all aware of the fact that it is extensive and has been a major enterprise for a number of years. All temperate fruits grow there. Apples are undoubtedly the most important being about 50% of the product; pears and peaches following next with about 20%; plums and prunes 7% and quinces about 5% of the entire acreage. At the same time New York ranks next to California and Ohio as a wine producing state. As to California it is interesting to note nearly $\frac{1}{4}$ of the fruit grown in the United States comes from the orchards of this state while New York stands next with nearly one half of the total output of California. On the other hand New York leads in the production of apples followed by Pennsylvania and Ohio. This as I have said is interesting to note as we can readily see that the orchards of York state have played and do play an important part in the fruit industry of the nation.

However it is not so much the extent of the fruit growing industries in the several states that should occupy our attention at this time, so much as the methods and factors concerned in successful fruit farming. By this I also mean fruit farming for profit as well as for the pleasure we may find in the ever interesting employment.

I have often heard the remark that the opportunities for

fruit growing in Wisconsin were curtailed by the extremely severe climatic conditions. This is in part true but we must bear in mind that the climate of New York is also severe although there may not be the extremes in temperature so often met in our own state. The New York Orchardman has overcome to a great extent the disadvantages of the climate by a careful study of the vitality of certain kinds of trees and the most advantageous placing of orchard plots. In Wisconsin I find that often the matter of placing the orchard is never given a thought. The trees are selected too often upon the recommendations of nursery agents or others not well qualified. And the surprising thing to me is that this should be so in spite of the most excellent work that is being done by the Wisconsin State Horticultural society in advising and helping those interested in fruit culture.

In New York it is generally conceded that orchards are most successful when planted near large bodies of water; in the protected lands of valleys; upon elevated rolling land or at least in locations where good drainage is secured. It is also observed that orchards planted on the north slope of hills under the conditions which retard the blossoming in the spring and avoiding the late frosts which often ruin the entire crop.

As to the care of orchards after planting, I am believing that more attention is given to this matter in the east than in the west. The orchard is looked upon as a source of income of no small importance by the New York farmer and for this reason its cultivation is as important as is the cultivation of the corn or tobacco crop in the mind of the Wisconsin farmer.

For a number of years there have been different ideas as to the proper means of cultivation and all positions have been stoutly defended by men of judgment, ability and experience. As a boy I well remember the long line of argumentation in horticultural meetings upon the efficacy of various forms of mulching. In New York both the sod and dust mulches are used and some advocate the grass mulch. Undoubtedly marked success has been obtained by all methods as varying conditions demand varying methods of cultivation. Generally it is conceded that the sod fruit is of better color and has strong keeping qualities. On the other hand it has been found that the cultivated trees are more constant in bearing, they grow better

and are seemingly better able to withstand the winters. In my home county (Genesee) the open cultivation was continued until July and often into August. At a recent meeting of one of our county horticultural associations, a marked objection was made against the open cultivation of orchards on account of the washing of soil during heavy rains. In the east this is obviated in the use of cover crops usually rye, oats, clover or legumes. We were in favor of the clover from experience in the home orchards. Not only does the cover crop prevent the washing of the soil but it tends to hold moisture during the dry season and at the same time will hasten the drying in the spring.

The New York farmer is also considerate in the proper pruning of his trees. Among those who have given the matter considerable thought it is reported that the winter pruning increases the wood production while summer pruning tends to produce fruit. To one who has given the matter of proper pruning any consideration we cannot but regret to see so many young orchards in our own state of Wisconsin, failing to meet the expectations of their owners, simply through the fact that the young trees are strangled in their development through carelessness in or the entire lack of pruning.

The eastern orchardman differs from his western brother in another respect. He takes time for his trees to grow and mature before producing fruit. In this way he lengthens the life of the tree and secures a better quality of fruit. I realize that in Wisconsin the life of an apple tree is much shorter than it is in New York, yet I am not fully convinced that it is the best policy to force young trees in their production. In the east great care in transplanting is taken which is a matter of vital importance as you well know.

Various devices are resorted to in securing perfect and sound fruit. Spraying fruit trees has been a common practice in New York for many years and when carefully and scientifically done practically insures the fruit crop. We sometimes resorted to a method which I have not seen in the west, that is the use of the so-called smudge pots. This consisted in placing an iron or metal vessel in the lower part of the tree or on a tripod under the tree and placing within the same

coals and on the live coals corn cobs which had been dipped in pine tar. By allowing this to burn slowly forming a smudge which lifted through the tree practically the same effect as spraying was produced. In describing this at the Manitowoc County meeting, I was interested to learn from a gentleman present that he knew of the same method being used successfully by farmers in treating oats which were to be used for seed. The seed oats being suspended in burlap sacks in the farm store house for a short period and thus being thoroughly fumigated.

As to varieties of apples, when one takes into consideration the fact that there are about 1,500 different varieties of apples in cultivation it is useless to attempt to mention any in particular. Varieties which have been successful in New York will not always be the apple to plant or grow in Wisconsin and our own State Society has done much in determining the best varieties for the Wisconsin orchards.

I am believing that the older and standard varieties are the best and many of the newer varieties are more to be considered as novelties than anything of practical value. Those of us who were boys in Western New York can never forget the Red Astrachan, Golden Sweet, Yellow Transparent and Snow Apples among the earlier varieties while the Magnum Bonum, Northern Spy, Greening, Pippin, Russet, Spitzenberg, Baldwin, Winesap, etc. are the old time favorites among the later sorts.

PEAR ORCHARDS.

The pear orchards of New York rank fourth in importance. The trees commonly grown are commonly known as the Standard and the Dwarf. The latter is produced through grafting on quince roots. In planting the Standard, trees were planted from 18 to 22 feet apart while the Dwarf were set 12 to 16 feet. Some growers considered it a wise plan to run every fourth row in another variety to insure pollination.

In cultivation the pear orchards were handled in much the same manner as the apple orchards excepting that the nitrogenous cover crops are to be avoided on account of the tendency to woody growth and the prevalence of blight, the great enemy

of the pear tree. In all cases the trees must be carefully pruned and are expected to bear with profit from five to seven years after planting. In marketing pears much care must be taken to see that the fruit is picked firm, usually about two weeks before becoming ripe. If the fruit is left to ripen the well known grit cells are usually formed. In Genesee county the Bartlett and Seckle were favorite varieties.

QUINCE ORCHARDS.

In some parts of Wisconsin the quince tree and even the fruit is an unknown quantity. This is due in part to the fact that very few people have learned to properly prepare the sweet apple and quince preserves which were so well known and appreciated by every boy so fortunate as to have grown up among the quince orchards of the east.

The quince trees seem to grow under the same conditions as the apples but thrive best in the heavy, rich and somewhat moist soil. Two varieties were grown on our farm, the Champion and the Orange. The trees stood about 12 to 15 feet apart and were cultivated the same as the other fruit. The fruit always found a ready market and is a profitable one for the eastern fruit grower.

In conclusion permit me to say that I am believing the opportunities in Horticulture are just beginning to be realized in Wisconsin. Our farms are larger than many in the east and other agricultural pursuits conducted upon a large scale have occupied the attention of the Wisconsin farmer during the past. In the future as many of the farms of one hundred sixty acres are divided into smaller farms of eighty and even forty acres, fruit growing will be found more profitable than grain or general farming and while Wisconsin may never become known in the markets of the world as a fruit growing state as is New York or California, there are undoubtedly splendid opportunities especially in the production of the small fruits. In any event too much importance cannot be placed upon the careful and scientific study of the best methods in order to secure the best results under varying conditions. This I realize is being done right here in Wisconsin in the splendid work of our Agricultural College and the State Horticultural Society. The only thing that seems to block the way to early

realization of the plans of the College and State Society, is the unexplainable reluctance shown by some farmers in profiting from and by the experimentation which is being carried on in their interests. And this will be overcome some day and that they will mean the highest achievement of the Wisconsin State Horticultural Society.

DISCUSSION.

Mr. Geo. J. Kellogg: I wish to correct the impression that the Professor reports for all New York; it is no doubt a report from Genesee County all right. I know of a good many orchards in Chautauqua County where they use the grass mulch and mix in Canada thistles and burdock and they grow well. There is one orchard to which I sent down to last fall to get a barrel of apples, the man has about five acres of orchard, he could not send me a single barrel but what he was ashamed to send; the trees had not been pruned for thirty years and they do not spray at all, and spraying and cultivation is neglected all over the State more or less.

ARSENATE OF LEAD.

An informal talk by MR. H. M. ASHBY of Chicago.

The manufacture of arsenate of lead and the other insecticides is very complicated and very much involved, so that it will be very difficult to go into it here in a way that would be interesting, and as I am not a practical horticulturist, it is impossible for me to go into the spraying side of it with any advantage to you. Perhaps the reason that arsenate of lead was first used was the fact that Paris green, while it did the insect killing, settled so badly that it lost a great deal of its value in big spraying work. For a man using insecticides in a small way Paris green was very satisfactory, but when he began to use it in a big tank and big spraying outfit, it was troublesome, so the chemist and horticulturist looked around for some other poison, which would spray better, which would stand suspension better, and still kill, and among other things

they hit on arsenate of lead. They ran over the other various arsenate compounds and finally the consensus of opinion decided that arsenate of lead was the safest and most effective. To my mind you can make a comparison between arsenate of lead and Paris green in this way: Paris green when examined under a microscope appears like a hailstone, and arsenate of lead when examined in the same way looks like a snowflake; there you have the relative settling qualities of the hailstone and the snowflake, and if you examine Paris green under the microscope it is a perfectly round green sphere, a round ball; arsenate of lead has a soft, irregular, what we call amorphous condition, just like a piece of newly fallen snow, and for that reason it was very much better in our spraying mixtures; it settles very slowly. You stir up arsenate of lead and it takes about ten times longer to settle down into the same density, the same space as Paris green will and when it is settled down, it is very much easier to stir up, it never settles hard. Now, when you come to the making of it, there are a great many points which have to be observed. It is made from some form of lead, some soluble form of lead, either sugar of lead, which is lead acetate, or nitrate of lead, and arsenate of soda. Now, these two things are very simple at first sight, it seems very simple to dissolve these and mix them together, but a great deal of care has to be taken to get the mixture just right. All of you who have used Bordeaux mixture well know that for instance on the 4-4-50 formula you can slake your lime and then mix it with water, five gallons, and blue vitriol, five gallons, and you have a heavy precipitate that settles down quickly. Take the same mixture, dilute your lime to 25 gallons, and dilute your blue vitriol to 25 gallons, and pour them together, and you have a mixture that settles in suspension very much sooner than arsenate of lead when it is made. If arsenate of lead is precipitated from dilute solutions, it will never settle and never press into a small space as if thrown down and it will never make the solutions too strong.

Another advantage in the use of arsenate of lead over Paris green is the fact that it is safer to use; you can use it in very much larger quantities than you can Paris green or any other insecticide that is known. Suppose you want to use a very radical amount of any other of these insecticides, you have

run into serious trouble in burning foliage. That applies to Paris green or any of them, but arsenate of lead you can use under ordinary conditions in almost unlimited strength and you do not risk the burning of the foliage. That is another great advantage of this material. The company for whom I work make both arsenate of lead and Paris green, and we have a big Paris green business, but we have found that the general tendency among all our users is toward the arsenate of lead. I do not want to "knock" Paris green, because we make and sell a lot of it, but the arsenate of lead has a definite field which has to be worked out, and every manufacturer who is looking for horticultural business is working closely with the State and National authorities, because they all believe that that is the coming insecticide for big work, either orchards or any big areas. One of the early objections that we found to the use of this prepared arsenate of lead was that in the effort to give the consumer as much value for his money as was possible, it was pressed too stiffly and any man that has tried to work this heavy stiff paste into proper consistency has found it difficult and almost impossible to do so, and the tendency to-day is to prepare a very much softer paste with more water in it and let it go out on the distinct understanding that it is sold on the basis of actual arsenical compound. The idea is to buy it in the best condition to use, and then figure into the cost so much dry material which was actually present. In regard to the use of this material, in combination with other spray mixtures or fungicides, arsenate of lead can be mixed readily with Bordeaux mixture, but cannot be mixed with lime sulphur. The use of arsenate of lead with lime sulphur spray almost always results in a black precipitate, wherein the virtue of both the sulphur and arsenate of lead are lost, chemical reaction takes place which makes an injurious mixture, but the combination of arsenate of lead with Bordeaux mixture is very satisfactory. The Bordeaux is made up in the usual way, say the common 4—4—50 formula, and then use about two to three pounds of arsenate of lead, putting the arsenate of lead with the lime, there is no chemical action takes place between the lead and the lime, and when the mixture is completed with the blue vitriol, no action takes place, but if the arsenate of lead is mixed with the blue vitriol, then there is likely to be trouble; it is not very definite trouble,

but there is likely to be a little of it, but made up in the proper way, arsenate of lead gives splendid results with the Bordeaux mixture. I do not know that I have very much else to say except in regard to that bill; I have been present at the meetings; we are in accord with that bill and all the reputable manufacturers are very heartily in favor of that bill; they are very anxious to see a very rigid standard put up on these insecticides, because we all realize that more harm is done to our interests by harmful and injurious sprays which are sold under the names of good brands than anything else that can possibly be done. We know that we cannot put these insecticides out without giving good value for the money and if one manufacturer puts out an inferior grade, that hurts all manufacturers, so that the manufacturers would like to see a very strong endorsement by all State and National societies of this regulation and are thoroughly in favor of it. That new bill requires that arsenate of lead shall have 50 per cent dry arsenate of lead and less than three quarters of one per cent of soluble acid and in Paris green it requires that there shall be the usual amount of arsenate, I think it is either 50 or 55 per cent that it requires and less than $3\frac{1}{2}$ per cent soluble acid. If there are any questions on this preparation of arsenate of lead, I shall be very glad to answer them.

Mr. Geo. J. Kellogg: I understand there is no danger of mixing it with the Bordeaux mixture when it is made.

Mr. Ashby: It must not be mixed with the blue vitriol, it needs the lime to protect it before it comes in contact with the blue vitriol.

Mr. M. S. Kellogg: I understand there is an injurious effect by using arsenate of lead before the union of blue vitriol and lime. Is there any injurious effect after the Bordeaux is completely mixed?

Mr. Ashby: I am not positive about that, but the chemistry of the thing would indicate that it was better to have the lime in combination or combined with the arsenate of lead; in case there is a little excess the other way it would be better to put the arsenate of lead with the lime than it would to put it in after the Bordeaux mixture was completed.

A Member: Does it take three pounds of arsenate of lead to a barrel?

Mr. Ashby: That is the approximate amount, the proportions vary, I have seen it used as low as a pound and a half.

Mr. Irving Smith: What is the relative cost of doing the same amount of work with arsenate of lead or Paris green to spray over an acre of potatoes or an acre orchard?

Mr. Ashby: That can probably be answered better by somebody other than myself, but from what I have seen of the thing and what information we have been able to dig out, the first cost is higher, but the final cost is lower. Arsenate of lead sticks better and there is not quite so much danger of its washing off and while the cost of the first material is higher, yet at the end of the year the final cost of the material is lower and the cost of labor is quite a little lower. That is the impression I have got from general conversation.

Mr. Palmer: I would like to ask if you could give us the relative strength of a pound of Paris green and a pound of arsenate of lead?

Mr. Ashby: The general comparison is $2\frac{1}{2}$ to 3 pounds of arsenate of lead to one pound of Paris green.

Mr. Palmer: Which contains the more arsenical poison?

Mr. Ashby: It is difficult to say offhand, because in Paris green arsenic is present as an arsenite, three atoms of oxygen to two atoms of arsenic, whereas in the arsenate of lead it is present in the form of arsenate, five atoms of oxygen to two of arsenate, so I could not answer that offhand, I would have to figure it out.

Mr. Bingham: What per cent of arsenate?

Mr. Ashby: Arsenate of lead contains about 15 per cent arsenic acid and Paris green contains 56 to 58 per cent arsenious acid.

Mr. Bingham: Then in using 3 pounds of arsenate of lead to 50 gallons, that would be equal to about a pound of Paris green?

Mr. Ashby: Yes, about $2\frac{1}{2}$ pounds is about the accepted amount, I believe.

BEST METHODS OF MANAGEMENT FOR WISCONSIN ORCHARDS FOR THE FIRST FIVE YEARS.

Mr. Bingham: The subject of orchard management has come up all through the meeting in different ways; we have had different discussions on the subject. Now, in regard to the management of an orchard for the first five years, of a commercial orchard, I can do no better than to give you the methods we are following in our own orchard. Locations differ and the different methods of cultivation have to be studied out with regard to your location, as Prof. Sandsten this morning said to you. If you are on hilly land, where the possibilities are of considerable washing, I would not advise cultivation as I would on level land.

In the first place, I would like to start the management of my orchard about one year before planting, getting the ground in good condition, planting a crop so that it is well prepared, putting on a good crop of clover and getting the land so as to have the trees growing from the start. I like to plant as early as possible in the spring and then give good cultivation. Now, the general opinion in Wisconsin is that we cannot afford to cultivate this orchard without any cropping and so we practice growing crops in the orchards. We rotate as much as we can and grow as many of the legumes as we can, we crop for ten years, but as this is for the first five years, I will say we grow a crop of beans. Now, if we are on land where the trees make a good growth, and we wish in our trees to make a good growth, we must crop accordingly. If we see our trees are growing too rapidly, we can put in into clover crop one year; as soon as a crop is cut, turn under and put in a second crop of clover. A crop of potatoes is a good crop for the orchard, beans and peas, rotating as much as we can to get a proper rotation, keeping the soil full of humus. If I can turn under the second crop of clover, then plant potatoes, take those off in time enough to get a cover crop of oats or peas—if they are taken off by the first of September we often get a very good crop of peas, that is about the plan I would follow for the first five years. There is another thing in regard to cultivation, if we do wish to cultivate the orchard without any crop, I would cultivate early

in the spring, giving the trees an early start, and the wood will be in shape to ripen up by the middle of July. Cherries especially will ripen after the first of July. For cover crops we use oats and peas. Now, it is necessary to prune annually and spray annually. If you have no crop of fruit, it is not any reason why that orchard should not be sprayed as thoroughly as though we had a fruit crop to protect the foliage; perhaps it would not be necessary to use as many sprays, but to spray in order to protect all the foliage we have, because there is the life of the tree, in a good healthy foliage. I think that would cover the ground for the first five years, that is the method of cultivation as we practice it.

Mr. Hey: You spoke of the cover crops of peas and oats, at what time do you sow that?

Mr. Bingham: Well, if I were sowing oats, a great deal would depend on the season. I would not want to sow them so they would get too rank a growth in the fall, and with the peas, they should be sowed a little earlier than oats, and if we are not growing any crops in the orchard, cultivate till the first of July, then sow peas and get a good stand. I like to sow a cover crop that dies down of itself in the winter, not rye; rye usually causes more work in the spring to get that cultivated in, but the cover crop of oats dies down, then you can put on your disk harrow and cultivate the ground thoroughly. In regard to the cultivation, we plow very shallow. I use a little gangplow, plow just enough to turn under this cover crop so that it does not clog the springtooth harrow, using that rather than the disk. The disk will not take hold and we oftentimes run over the orchard two or three times to get the results that we want. Now, by turning this over an inch or two deep, just enough to keep the plow in the ground, there is only a small square around the tree that is not touched and it gives a complete cultivation. That is one way we can keep the Canada thistles under control. Those tools are very convenient for that work.

Mr. Irving Smith: I should like to ask Mr. Bingham if corn is a good crop to plant where a young orchard is first set out? I remember seeing one where the trees were set, each tree taking the place of one hill of corn.

Mr. Bingham: I had six acres of that kind of orchard this year and I find that is not very successful. That was in cher-

ries, cherry trees planted in the corn field and there was some trouble with mildew on the cherry leaves by not having good air circulation, and a heavy crop of corn I do not think is a good thing for an orchard. I would prefer some of the lower grain crops.

A Member: What is the object of his cover crop if he allows it to be killed by the frost and does not turn it under when it is green?

Mr. Bingham: The object is just the same, we get the results from the cover crop, the benefit is not derived from the greenness, it is the protection given to the ground. If you do not have any snow, you will have less freezing and thawing of the ground than you would if it was perfectly bare, and the cover crop furnishes all necessary requirements and in its dead state acts as a mulch.

A Member: Does it fertilize the soil as much as if turned over green?

Mr. Bingham: I think everything is there that would be there in the green state.

A Member: You can sow crimson clover in the fall and plow it under in the spring, it would be better than oats.

Mr. Bingham: From my experience with crimson clover, I find it takes too much of the summer season to get crimson clover up to make much of a showing on the ground.

Prof. Sandsten: I hesitate recommending crimson clover for Wisconsin, because it often winter kills.

A Member: What does Mr. Bingham consider the most desirable crop for a young orchard?

Mr. Bingham: Well, if the soil is well adapted to the growing of potatoes, potatoes is a good orchard crop. It takes considerable fertility from the soil, but following that you can put in some beans or peas. Beans is a good crop in an orchard.

Mr. M. S. Kellogg: Is not there objection to trying to use crimson clover from the fact that it is rather hard to get a good catch and the cost of the seed, compared with the seed for an oats cover crop, is so high as to make the oats crop more valuable for the man growing commercially, and to cover the cost involved?

Prof. Sandsten: I think the oats is by all odds the best cover crop that you can use in this State. There are localities where we can use clover or peas, but as a crop for the average





A view in the Barron Trial Orchard Aug., 1908. These trees planted May, 1907.



Another corner of the Barron Orchard.

commercial orchard, it is undoubtedly the best cover crop we can use.

Mr. Bingham: That is my opinion, because it is pretty expensive for the man to get the seed supply of peas, it will take three bushels to the acre in order to get a good stand, and of course if peas are worth a dollar and a half per bushel, there is quite an investment for each acre of land, while with oats two and a half bushels will be sufficient.

ORCHARD MANAGEMENT FOR THE SECOND FIVE YEARS.

J. S. PALMER.

This orchard having received very good cultivation so far has made a vigorous growth. Now it should be large enough to begin business. The four cardinal principles of good orchard management are pruning, spraying, cultivation and fertilizing. Late in March or early April go over the orchard and remove all sap sprouts and unshapely branches, always holding the balance of the tree a little to the southwest. It is usually better to endure an unsightly or mis-shapen branch if large than to remove it, as great injury to the tree may result by very severe pruning, in fact most severe pruning should be done before the fifth year. Always cover all large wounds with wax or paint. When pruning wherever large limbs form crotches liable to split, the danger may be obviated in great measure by intertwining two twigs, thus forming a living brace. If this important matter were more often attended to in time many valuable trees might be saved that otherwise split down with the load of apples when fruiting really begins.

Spray just as green leaves begin to show with Bordeaux mixture 5-5-50, with 3 lbs. arsenate of lead added to each 50 gal. of mixture, then after the blossoms fall, spray again, using same quantity of arsenate of lead with Bordeaux 3-3-50 and again about ten days later with the same.

Plow and cultivate thoroughly in early spring and continue cultivation until June when oats may be sowed about $1\frac{1}{2}$ bus. per acre with six quarts medium clover seed. Care should be

exercised in plowing to cause as little injury to the trees as possible. Use a slow steady team with low hame harness and short whiffle trees and do not plow too deep near the trees. In fact surface cultivation is all that is required. The spring tooth harrow is one of the best implements for orchard use and most cultivation can be done with it. When the oats are about ready to head, mow, allowing the crop to remain for a mulch, thus insuring a good growth of clover. This will complete the cultivation for this season. This treatment will check the growth and start the development of fruit buds. The next season spraying should be attended to as before and no cultivation will be necessary. When the clover is beginning to blossom it should be cut and if abundance of barnyard manure is at hand to maintain the fertility there may be no objection to removing this crop for hay, but otherwise it should remain on the ground. A second cutting will be necessary just before time to pick the apples, which may also remain.

The next season plow and cultivate in spring. When the oats and clover treatment may be repeated as before. In our climate subject to excessive heat and drouth in late summer and fall we should conserve moisture as much as possible through this season and I know of no better way than to keep the ground well covered with clover.

Heavy manuring may be done at any time except perhaps in September when such treatment may cause a late growth of wood which failing to ripen would be liable to injury by winter killing. Plowing late in October or November may sometimes be beneficial in destroying the larvae of the apple gouger and many other insects and seldom causes injury by freezing. Some of our best orchard ground is so hilly as to make continual plowing impracticable. Where this is the case mulching may be resorted to and very good results have been obtained by continued mulching. But if possible plow even if only a narrow strip between the rows, reseeding to clover as often as necessary to keep out June grass, timothy and other undesirable growth. Keep all stock out of the orchard with the possible exception of sheep which may be allowed at certain times to clean up all waste after picking and also in June to destroy the small apples and incidentally the young worms therein. Poultry are beneficial in the orchard at all times and a great aid in keeping insects in check.

The time has passed when we could set a few apple trees in an out of the way place, let nature take its course and get apples. Apple growing at present is a thorough going business proposition and like every other crop grown from the soil we cannot get a satisfactory results without intelligent effort on our part.

The President: Now, we will call on Mr. L. G. Kellogg.

Mr. L. G. Kellogg: It seems to me that the evidence in this matter should be produced by some one who has actual and practical experience. While I must admit that we have quite a large orchard, it is a great deal like Topsy, it has "just growed," and I will also admit that we have not given it that thought and care that we should to produce a commercial crop of fruit. I do not know that I can add anything that will be of value to what Mr. Palmer has already recommended. The second five years I think the orchard ought to receive clean cultivation with a cover crop up to the age of seven years of the trees and then I think that it ought to be seeded to clover to bring the orchard into bearing.

The President: It is now in order for questions to be asked or experiences given. There are probably others in the audience who might add something.

Mr. Bingham: I have one remark to make in regard to what Mr. Kellogg said, that the seventh year he likes to seed down the orchard to get it into bearing. We do the reverse. We like to cultivate our orchards to make them bear; we find an orchard in sod will not produce apples, but we give those orchards a little cultivation, and the first year after we start cultivation we notice our results, we notice a difference in the foliage, a difference in the growth of the tree, the health of the tree, it is so complete a change from a tree with little small foliage to one of vigorous healthy foliage, that the man that sees those things never would allow an orchard in our section of the country to go back into sod. That was demonstrated very forcibly in the Society trial orchard of five acres. The largest apple that I could get in that orchard under the sod system was six ounces, this year, with but one year's cultivation—that orchard was plowed last fall, a year ago, and cultivated this summer, clean culture, a crop of oats, a cover crop, and this

year, the same trees produced apples of eighteen ounces. The fruit buds were weak and small, and the foliage was very small, this year the foliage on the Northwestern was almost as large as your hand, perfectly green and healthy.

The President: I should like to ask if the reseeding, advocated by Mr. Palmer would meet with your approval?

Mr. Bingham: Not in my section of the country where we have the limestone soil. I think you would get better results by continued cultivation and only use cover crops as a method of getting humus into the soil, so that our soil does not get too hard and firm, and shallow cultivation. I think it is understood that most of the roots of a tree are within ten inches of the top of the soil. Now if we put a springtooth harrow in, or plow deep, we injure the roots, necessitating that tree putting out a new root system and that is the reason why, if we plow in the fall, we should plow shallow.

Mr. Riehl: One point might be spoken of here and that is that the modern orchard with us is very apt to become infested with mice, or what we call gophers, and I have seen entire orchards destroyed where they would get in under the mulch and girdle the trees right at the surface, or a little below. It is possible, however, that these pests are not known as far north as this, but with us it is a serious thing, and if we allow a mulch in the orchard, it is best to rake around the trees and draw some earth around the trunk of the tree, then there is little danger of there being any injury.

Mr. Pomeroy: This question of cultivation is entirely a matter of location and soil; I think in the region where Mr. Bingham lives, the practice he speaks of is the proper practice to pursue, while down in Houston County, Minnesota, where I have lived for fifteen years, as well as over in La Crosse and Trempealeau counties, among the high hills along the Mississippi river, where they have a whitish yellow clay with rock foundation, you would not dare to cultivate every year; you can there put a Duchess and Wealthy orchard into clover sod and raise large and fine colored apples, while if you plow it and cultivate it every year, you would get an excessive wood growth and get the trees to blight very heavily, and go to pieces by the time they are ten to fifteen years old. My brother has bought a place, and we have got 2,500 Wealthy trees on that place com-



A view in the Poplar Trial Orchard Aug., 1908, showing ditches for drain tile.



Crab apple tree planted four years at Bayfield, Wis.

ing into bearing and Mr. Harris, our neighbor, probably many of you have known Mr. Harris of Minnesota, has had an orchard there for thirty-five years, and it has been everybody's experience that it absolutely will not do to cultivate year after year.

Mr. Kellogg: I would not advocate sowing an orchard to timothy and clover, but to clover alone, but the second year I would cut that clover, utilizing it entirely to mulch the trees, the second year I would plow this orchard again and by cultivating in this way add humus to the soil. Upon most of our clay soils it is necessary to do something of that kind.

Mr. Hey: I would like to speak about one thing, if I understood Mr. Palmer, he says that a 5-5 mixture for spray is the proper thing, is that right?

Mr. Palmer: That is for the first spraying in the spring before the leaves are out, before there is foliage on the trees. The second spraying at 3-3-50.

Mr. Hey: In the Southern part of the State they advocate having as low sometimes as one pound of copper sulphate and two is common. They say the 4-4 spray is injurious and they cannot use it.

Mr. Palmer: There is great difference in varieties in spraying. We have some varieties that even a 3-3 mixture will injure. I have frequently injured Snow apples by spraying with 3-3 mixture, while other varieties of course will stand a stronger mixture, but I would never recommend stronger than 3-3-50 after there are apples on the trees.

Mr. Bingham: I think the great trouble with the 3-3, 4-4 and 5-5 is simply in the lime. I think we can make Bordeaux mixture, no matter what strength, and we will have injury if we do not have enough lime. We all know the lime in Wisconsin, is very poor. I use the 6-4 and I could use 8-6 and never injure the foliage, because the entire amount of blue vitriol is neutralized by the lime and you can put in any amount of blue vitriol if you use enough lime to neutralize it. We spray all varieties the same and we get no injury at all if we use the 3-3, but with the 4-4 we get injury.

Mr. Palmer: Can you spray Longfield without russetting?

Mr. Bingham: I do not believe in that russetting with Bordeaux mixture. We spray the Longfield thoroughly and we

find apples, some of them rusty and some that are perfectly smooth on the exposed sides of the tree where we have had lots of Bordeaux, and we have tried to soak trees with extra heavy spray, and we find our trees are free from rust. I think that it is a weather condition, I do not believe Bordeaux mixture russets apples. This year I used the 4-6 formula when the apples were two thirds grown. One of the last sprays we put on was a thorough spraying along about the middle of August and we saw some of it on the trees when we harvested in the fall and not any russeted apples. On the Northwestern Greening, especially, back of my barn where I was experimenting, giving them a thorough spraying late in the season to see what the result was on the late brood of codling moth, I found the apples free of worms, we would hardly find a wormy apple on the tree. In other sections of the orchard, where we did not give them the extra spraying, we found more wormy apples. Dig out that little red spot on the apple and you would find the codling moth in a small state, the egg was laid on the apple and they were eating in, you would not notice them at first, but as late as October when we were picking winter apples, we would find the red spots and by digging in we would find the little codling moth. Those go into the barrel and you wonder where those worms came from in the barrel, because you were certain you did not put any wormy apples in.

AFTER THE TENTH YEAR.

The President: We have now brought our orchard up to the tenth year and Prof. Sandsten will take charge of it from now on.

Prof. Sandsten: It seems to me when you get an apple orchard up to the age of ten years and in good bearing, that you have the whole problem solved and there is no use for me to dilate upon what has already been said.

The best thing, if the orchard is alive, when it is ten years old, which it sometimes is, is pruning, and when the pruning is done, I advise you not to use a hatchet or a crosscut saw. I prefer to prune before the sap flows, although a little after the sap has started is all right. I would spray every year, regardless of the crop prospect. I would make the first spraying be-

fore the buds begin to swell, or about the time the buds begin to swell. I would use about two to three pounds of copper sulphate and the same amount of lime to the 50 gallons of water. We do not believe in using more than 3 pounds of copper sulphate, because we have found that 3 pounds of copper sulphate is sufficient to prevent the fungous diseases from getting a start. Now, the apple scab spores light on the buds and if we do not spray, these spores will start to develop as soon as the buds expand, so you want to cover the buds with the spray to prevent the spores from germinating. Bear in mind that the spore is just the same as the seed. Then when the buds are about to open, we give the second application, and we use the same mixture. The third application we apply when the petals of the blossoms have fallen. We use the same mixture but to it we add from two to three pounds of arsenate of lead; this is to get the first brood of the codling moth. Now, the only reason for putting the lime in for the first two sprayings is to indicate where you have been spraying. We spray at least once more, using the same mixture of 3-3, together with arsenate of lead, or we use the 4 and 6 formula (4 of copper sulphate and 6 of lime.) I do not believe in the 5-5 formula, because, as Mr. Bingham has said, our lime is not pure lime, and for that reason 5 pounds of our lime will hardly ever neutralize 5 pounds of copper sulphate and an injury is done to the foliage and fruit.

After the spraying is done comes the question of cultivation. I would lay down as a general rule that an orchard should be cultivated and then we will modify this rule to meet the conditions of the individual grower and that is the only rule you can lay down. We have a portion of our orchard at the Experiment Station that has been in sod for a number of years. Of course it is rather steep, but let me tell you that anyone can go into that orchard at fruiting time and see the difference, not only in the vigor and health of the trees, but in the amount and quality of the fruit on the trees, and I do not care what the advocates of sod orchards may say or do I will stick to thorough cultivation and I think every progressive, up-to-date, successful fruit grower will do the same. (Applause.) I know a 900-acre apple orchard down East on a hillside, steeper than I have seen in Wisconsin, on which apple trees have been planted

that is cultivated in strips, and in a few years that whole hill-side, or mountain side, will be terraced and it can be cultivated thoroughly. Further, I do not believe in sheep. They are all right, but I do not want them in the orchard. Give me the pig or hog of the right kind. He can get more grubs and insects than any other animal I know of, and he will do no damage, and then you have something to eat later on. Do not let him do all the cultivation.

The cover crops I would plant about the middle of July, and I sow oats. Clover is all right, but you want to look out, as otherwise you may get too much wood growth. You do not want to grow too much wood, you want to have fruit and as long as you have too much nitrogen in your soil, you will have fine looking trees, good growers, but you will be minus the fruit. I do not believe in raising crops of clover, and turning them under; the average soil, on which we grow apples in this State, has enough nitrogen in it, what we generally need is phosphoric acid and that you can apply according to directions that were given here yesterday. I should not keep on cultivating, if I found that the orchard was growing too rapidly, is producing too much wood, but should be inclined to seed it down for a year or two, only until the wood growth declines. I will tell you the reason for it. You know the tree has to get food supply in order to grow and if you have a covering on the ground of sod,—generally blue grass as I find in most orchards in Wisconsin—the air and sun is shut out, there is no decomposition of the materials in the soil, because the air cannot act upon it, the soil is stagnant, not aerated, and in such condition is not a fit home for the roots to live in, they have to have air like everything else that is alive. Further, sod orchards are more subject to droughts; an orchard in cultivation will stand twice as much drought that a orchard sod will, and that means a great deal in this state where we are subject to summer drought, and the droughts generally come in the season when our fruit is growing, and so the fruit needs a large amount of moisture in order to develop the proper size. I do not know that I can enlarge upon this any more; I think the subject has been gone over quite fully from the infancy of the orchard up to old age.

Mr. Geo. J. Kellogg: There is one question I want to ask

in regard to the spraying, would not you catch enough curculio to pay for putting in the arsenate of lead for the first two sprayings?

Prof. Sandsten: As a rule, yes. Now, let me tell you, that comes right in the line of cultivation, and a cultivated orchard is half as easy to take care of so far as disease and insects go as one in sod, because it is only half as subject to these things. Of course, if you have a "buggy" neighbor you are apt to get some of his animals, but in your own orchard if you cultivate and spray, the insect and fungous problem is so much less than it would be if you did not spray. Also in fighting insects and diseases, it is the first application, the timely application that counts. If we kill the first brood of the codling moth, the second brood will be very small and will not trouble us, but as it is in this State, the first brood is relatively small, but what a crop we have when the second one comes around, simply because we have not killed the first brood and if we only would have sprayed thoroughly the first time, we would kill out the parents of this numerous offspring that appear the second time.

Mr. Kellogg: Now, the varieties for a commercial orchard?

Prof. Sandsten: Let somebody else, whose hair has silvered in the service of horticulture in the State of Wisconsin answer that question. Mr. Kellogg is more capable and knows more about varieties than I do. If I should plant a commercial orchard in this State, I should not plant over—well I will say six varieties for summer, for fall and winter varieties I would not go to a list of forty or fifty, because if you do, you will not have a commercial orchard, except for nurserymen who want to grow scions it is all right, but for a commercial orchard I would not, and as to varieties, I will let Mr. Kellogg answer the question.

Mr. Kellogg: I am not a commercial grower. When I first set my orchard in 1854, I put out fifty varieties, and I will call on Mr. Palmer to give us his experience at Baraboo on commercial varieties.

Mr. Palmer: As far as my commercial orchard is concerned, it consists of about fifty varieties. Out of the fifty varieties I could pick out seven or eight that would include all the profitable varieties that I have ever grown in the orchard. Of course there is an occasional profit perhaps out of some of the others, but not worth considering in a commercial way. Grow enough of one kind so that you can have sufficient quan-

tity to place in the market to make it an object. If possible, grow the kinds together, grow one kind in a block, so that in picking and packing you do not have to travel all over the orchard. That is a great point. I, perhaps stick to some of the old kinds that I would hardly dare to recommend here, or recommend for all over the State. The Wealthy, McMahan and Northwestern probably are in the lead of anything we have now up there.

Mr. Kellogg: Only three varieties?

Mr. Palmer: I say those are probably in the lead, I would plant Golden Russets, Tolman Sweet, Fameuse, Utter, Plumb's Cider, these have been as successful with me as, any I have planted.

Prof. Sandsten: It simply emphasizes the point that we are planting too many varieties, and if we only planted a few varieties, and if we had an orchard of any size, it would pay the commission man or fruit dealer to go into the orchard and buy a crop, but no dealer is going to buy an orchard of fruit when you have fifty to sixty varieties, he cannot handle them profitably.

Mr. Pomeroy: In New York, where a farmer has a great many varieties, the buyers call it the "succotash" orchard, and pass it by. At the Minnesota meeting the question came up, "What would you plant if you planted a thousand trees?" Mr. Edgar got up and said 999 Wealthys and then another Wealthy. I think that except for the Duchess, Wealthy and Northwestern Greening there is not very much of commercial value for planting.

Prof. Sandsten: I would not put it as strong as that, I think we have some very good varieties that we could plant and some varieties I would plant in preference to Northwestern Greening. What I mean to say is, select a few varieties and stick to those, but be sure you have the right variety for your own locality, and not because one man one hundred miles away from you is growing a variety successfully, do not plant the same.

Mr. Kellogg: I have been asked several times to name varieties for localities and I always say, "Look about and see what is doing the best on soil like your own and locations like your own and go for those varieties." I would not plant more

than three or four or five kinds. Newell was put on the list of five at the State Fair, we began to "use up" the Newell this forenoon, I don't know but perhaps we might "use up" everything else but the Duchess. Stickney used to say 99 Duchess and one more Duchess in a hundred. Duchess is all right and Wealthy is all right, I think McMahan is all right and Patten's Greening, but wherever these are a success, plant them, that is the rule.

Mr. L. H. Palmer: I want to say one word to Prof. Sandsten about the hogs. We put hogs in our orchard and the trees make a nice place for them to scratch against, they wear the bark off. Not only that, I have seen them gnaw the trees, pull them down. We keep them out, they kill a tree in two or three years.

Prof. Sandsten: I can only say there are hogs and hogs. I presume there are individuals of that type that would help themselves to some bark and who would feel inclined to relieve their feelings by leaning against a tree, but as a rule I found that even in a young orchard they are not harmful, but beneficial in picking up the wormy apples. I would put a piece of wire in their noses so that they would not be too obnoxious in getting down into the ground.

SHRUBS AND ORNAMENTALS.

E. A. SMITH, Lake City, Minn.

What kind of a picture shall the home and its surroundings present? First impressions are lasting and they should be pleasant ones.

The frontispiece and foundation work will be the velvety grass upon the lawn. The perspective and coloring will be represented in the arrangement of trees, shrubs and flowers. Here is a great opportunity for individuality to assert itself. No two landscape architects or individuals would equally approve of the same design. While tastes vary and different designs possess equal merit there are some designs which would be bad, just as there are some pictures which are bad, as colors and effects may be made to literally swear at one another.

In designing a lawn, the picture must be taken as a whole. Piece work cannot be made artistic. The pepper and salt arrangement of shrubs has had its day. The effective massing of shrubs and flowers idea, has come to stay. It is not the purpose of this paper to be arbitrary, nor to give detailed or botanical descriptions of various plants which may be suggested. These can be found in good catalogs, encyclopedias or in books pertaining to horticulture.

HARDINESS.

Without question, however, the one important thing to be taken into consideration in this Northwestern country, is hardiness, for no one cares to spend time and money in planting those things which will not stand the climatic test. We are, therefore, somewhat circumscribed in our choice; but there are many things which are both hardy and beautiful. By hardiness, we mean the ability of plants to resist freezing, thawing, drought, blight, sun-scald and fungus diseases. There is probably not a tree or shrub growing but what is susceptible to some of these weaknesses or defects; but there are many which possess only one or more of them to a limited degree, and subject to control.

DESIGNS.

Whether one wishes a lawn design, formal or natural is the first question to be considered. In the North, especially, the natural design would seem most appropriate. Nature has suggested many things and ways in which the planting may be made to appear natural, yet nature is careless, prodigal, and even wasteful in her resources, so that even she may be improved upon by judicious pruning here and there.

When you plant a tree or shrub, remember that it is planted with the expectation that it will remain for years and perhaps for generations, so the right place should be decided upon at the beginning, or transplanting will be necessary, making it expensive, perhaps even causing a loss of the plant itself. The modern spirit of landscape planting is to have it approach as nearly as possible, natural effects. Years ago, landscape designs were conducted upon a different principle. Then,

everything was formal. Even the hedge was sheared in fantastic shapes. Now, the desire is to make shrubs appear graceful, not over-crowding, nor yet too scanty in the planting. Beautiful vistas and avenues of approach should not be obscured but openings should be left here and there which will enhance the view. Even foliage and color of the bark is to be taken into consideration in producing harmonious results.

A design that is appropriate for the bungalow or the summer cottage by the lake, would scarcely be appropriate for the average city home.

TREES AND SHRUBS.

Fortunately, there are shrubs and trees equally appropriate for settings of every kind. The stately Elm will remain one of the standards for boulevards. The majestic Oak, were it not for its slow growth and difficulty in transplanting, would take a prominent place. In many parts of the Northwest the Green Ash is most desirable. It is clean, hardy and thrifty. Among the hardy ornamental trees for interior lawn planting, may be included such as the Cut Leaf Birch, one of the most beautiful of all the ornamental trees. Second, is the Mountain Ash. What a fine contrast these two trees present to each other, the latter with its red berries which are often carried into winter. Its dark, almost green bark being in direct contrast to the white of the Weeping Birch. The American and European Lindens may also be planted on boulevard or lawn. Though inclined to sun-scald, these trees when young, together with the Mountain Ash, should be wrapped with strips of burlap cut about six inches wide, tied with soft twine at the surface of the ground and wound spirally to the branches; this will remedy the difficulty.

The Golden Willow is very handsome as a young tree, but as it gets older the bark loses its handsome color and effectiveness, and becomes a dull gray. The Niobe Weeping Willow, which originally came from Siberia, introduced by Prof. Hansen of the Brookings, S. D. Experimental Station, we consider an improvement upon the Golden Willow. The beautiful, drooping habit of the long, slender branches is interesting. Best of all, the tree has proven hardy.

A northern grown variety of the Hackberry is desirable, but the southern grown or that from seed procured as far south as Kansas, will freeze back when planted as far north as central Wisconsin.

The Kentucky Coffee Tree, which is a native of some parts of Wisconsin, is a valuable addition to our northern trees. Its merits are not sufficiently known or it would be planted more generally. Its foliage resembles somewhat the Locust tree, but it is more shapely as a tree.

The Catalpas we class among the semi-hardy trees, the *Speciosa* being the best of the varieties. Among the semi-hardy Horse Chestnuts, the Buckeye variety is generally considered best for the Northwest.

Among the high growing shrubs and low growing trees, the Russian Olive with its light, silvery foliage presents a good effect and when it is in blossom the fragrance is delightful. The Buffalo Berry resembles somewhat the Russian Olive. It is sometimes used for a low growing hedge, but does not stand shearing well. Both of these trees are hardy and well adapted to exposed positions on the prairie.

Many of you know of the Compass cherry plum prized chiefly for its fruit for canning purposes; but it is a beautiful ornamental tree. It never grows so large that it is obtrusive, and with its umbrella-shaped top, beautiful green and closely compact form of growing, in the spring of the year when it is in bloom, is one of the handsomest of the flowering trees, and may well be substituted for Bechtel's Flowering Crab, which, in the Northwest, is semi-hardy except in protected localities.

The Caragana and Buckthorn, each of which attains a height of some 15 ft. if allowed to grow, may also be sheared making excellent low growing hedges. The shearing of hedges for formal effects may be desirable, and where high growing shrubs are used, it is necessary that they be sheared. Individual tastes are to be taken into consideration, but when sheared, the hedge loses much of its gracefulness and natural beauty.

The Iboya Privet we have found hardy; it makes a very fine hedge, also the Amoor Privet; but the California Privet is not hardy in the Northwest and should not be planted.

There is almost a limitless number of Spireas, Dogwoods, and

Lilacs, from which selections may be made to advantage. We cannot here specify regarding the different varieties. Grafted lilacs are especially desirable as they do not sucker.

EVERGREENS.

Many are partial to evergreens—others regard them as heavy and depressing, especially if planted near the house. The Colorado Blue Spruce, Pyramid Arbor Vitae and Dwarf Mountain Pine are among the most desirable of the ornamental evergreens for lawn planting. The standard varieties of evergreens are familiar to everyone.

HERBACEOUS.

The list of herbaceous plants, however, should not be overlooked, as there are many varieties which are not only beautiful but they may be so arranged that there will be continual bloom from early spring until late fall. They must be taken into consideration in connection with the grouping and massing of shrubs for flowering effects, as the plants in the herbaceous tribe may be used for borders. The Peony, of which there are some 2,000 named varieties, presents a great field for effective contrast. The Phlox, tall and low growing, pure colors and mixed colors, may be so arranged as to have bloom for at least four months in the year. The Gaillardia, with its brown and yellow coloring and long continued bloom, is very desirable. The Platycodon or Chinese Bell Flower, in colors blue and white, is also most satisfactory on account of its long blooming period. The Yucca with its stately spikes of creamy flowers deserves a place on every lawn. The Bractatum Poppy, large and deep red, is gorgeous in its effect. The Bleeding Heart is known everywhere, and the old fashioned Larkspur is again in popular favor, while the prim and stately Hollyhock has been restored to its rightful place.

VINES.

The Vine also plays an important part in lawn decoration. For the covering of rookeries, old fences, decoration of brick or stone walls, or chimneys and other odd effects, the vine is indispensable. In those localities where the Boston Ivy or Am-

pelopsis Veitchii can be grown, for climbing or clinging to stone or brick walls, there is nothing better. The next best Ivy for buildings is the Ivy Englemanni, which resembles somewhat the American Ivy; the foliage is a little finer. This also clings to brick or stone and is perfectly hardy.

The Dutchman's Pipe or Aristolochia Siphon, with its broad green leaves is massive and hardy. This vine does better when planted on the North side of buildings or even in a shady place.

A beautiful effect upon our grounds at Lake City was obtained as follows: An Oak tree some 2 ft. in diameter died, and around the base was planted a half dozen Englemanni Ivy vines. In a few years these overrun the top of the tree with a mass of vines. The effect was odd, and in the fall when the leaves had been touched with the frost, the foliage was surpassingly brilliant. The tree was situated in a place, where if cut down, it would have looked bare and empty.

SEMI HARDY.

We have experimented with 36 different varieties which were all recommended to be hardy by eastern and southern planters. In the vicinity of New York State, these things may be hardy, but in the same latitude in the West they are not. Out of these 36, we will mention only those which are perhaps most familiar, they being either semi-hardy or tender. They should, therefore, be planted with care in protected locations, if planted at all:

Calycanthus Floridus.

Clethra Alnifolia (Sw. Pepper Bush).

Cydonia Japonica (Japan Quince).

Deutzia Gracilis, *Crenata*, and *Pride of Rochester.*

Diervilla (*Weigelia*) are all tender except *Rosea* and *Eva Rathke* which will do well.

Forsythia Fortunia & *Varidissimo.*

Hibiscus Syriacus (*Althea*) and its varieties.

New Hydrangea (*Alba Grandiflora*).

Ligustrum (*California Privet*).

Lonicera Fragrantissimo.

Prunus Pissardi.

Ribes Sanguineum (*Crimson Fl. Currant*).

Spirea Prunifolia.

Spirea Reevesii.

Spirea Rotundifolia.

Tamarix Africana.

Viburnum Plicatum (Japan Snowball).

Kalmia Lalifolia (Mountain Laurel).

Wistaria (Chinese Section).

Teconea Radicum (Trumpet Flower).

Lonicera Halleana (Hall's Jap. Honeysuckle).

The Tartarian Honeysuckle, *Grandiflora* variety is hardy, but the *Splendens*, which has been recommended as being perfectly hardy, is not. It will freeze down three winters out of five. The blossom is larger and more profuse than that of the *Grandiflora*, but in the Northwest, it should be discarded where permanency is desired.

A few years ago the *Hydrangea Sterilis Arborescens* appeared and was and is recommended without stint as being hardy and desirable for all parts of the Northwest. This is really a beautiful plant. Acting upon the recommends of those regarded as authority, we began to propagate this variety and acquired a large stock. We find, however, it freezes back every winter.

UNRELIABLE.

Your attention is called to the fact that you cannot be safely guided in your Northwestern planting, by catalogs or magazines published in the South or East. You will find in this literature, various shrubs and flowers which are recommended as perfectly hardy for all points of the Northwest, but the articles are evidently written by parties who are not familiar with the conditions in the Northwest.

SUMMARY.

Plant intelligently northern grown stock that is known to be hardy and you will have no occasion to regret it.

OUR DUTY TO THE LANDSCAPE.

M. O. NELSON, Minneapolis, Minn.

Doubtless the majority of the people to whom I am talking were born and brought up chin deep in the landscape, with landscape to dig out, chop up, burn up and some to throw at the dog. Landscape stood as a bar between us and a crop of potatoes. Landscape held a first mortgage on everything in sight. The man who had spent his time mussing up the landscape sold his place as an "improved" farm and so drew dividends for his vandalism. In those days if a farmer wished to build his pigpen between his door and the public highway it was none of the public's business. If the public didn't like it the public could turn its eye and nose the other way, whip up the horse and go about its own business. If the farmer's wife chose to fling her slop water and potato parings plump into the middle of the landscape, nobody ventured to say her nay, for almost everybody was doing the same thing. But these were in the days of long distances between settlements; in the days of raw and unhampered individualism. In the days too, when we had inherited but little from our fathers in the way of respect for landscape, or in the form of landscape improved.

The times of this ignorance God winked at, I suppose, though even that did not save us from most miserable loss of God-given landscape, spoiled by the hand of dull-witted and thick-skinned men. Today if we were but awake enough to know it, landscape is property—public property—that is, your property and mine. We have rights in the landscape beyond our line fence, because, for one thing, the appearance of the landscape beyond our line fence has to do with the market value of our property. This is putting it in its crudest and most material form, because in that form the fact is most generally appreciated. To put a finer and more valuable point upon it, you have rights in the landscape because it has a hand in shaping your soul and in measuring your happiness in life.

That landscape is a tangible, taxable, marketable asset I know at first hand. I know it is taxable for when I planted a good looking shrubbery and flower garden about my home the assessor slapped an extra \$750 assessment upon it for taxation purposes. That landscape is marketable I can prove because when the Park Commission of Minneapolis began dredging the Lake of the Isles, making a scenic lake out of an old marsh, the adjoining residence property values jumped skyward, in many cases three hundred per cent.

We are learning now with reasonable speed, that it is a loss to the pocketbook to mar the landscape, and a few of us know that it is a loss to the soul. This feeling is growing in village and country, though there the old fierce desire for individual liberty that drove our most valuable ancestors over seas, is yet in the blood. Co-operation and its corollary, giving up a part of our individual rights, have not yet taken hold of people who live at long arm's length from each other. Where men rub elbows, and sharp elbows dig sensitive ribs, where people are packed into brick pigeon holes and are forced to breathe each other's breath, they learn to yield personal liberty for the public good. In such congested spots the value of landscape is first appreciated. It is there that the idea grows that landscape is worth money. It was conditions like these that first brought forth Park Commissions and levied park taxes.

It is an end earnestly to be prayed for, that the rural and village population of our country will not have to pass through this stage of unwholesome congestion before they learn the value of landscape. Not all of them will, as we know by observation. Cleanliness, beauty and good morals are contagious just as are disease and vice. When as a lad I used to haul wheat to town from the backwoods, fifteen long, slow miles, I noted that I was nearing town when I began to pass painted houses and barns. Regard for the landscape will radiate from the city in the ratio that it exists there. And it will radiate from your own home wherever you live, in like ratio. Your good example may be a long time catching, and beauty in your neighborhood a long time coming. But so is the millenium. That is not to say that both are not worth working and hoping for. Because our neighbors will not co-operate, because they will neutralize much of our beauty with their ugliness is no reason why we should not beautify. It is so much the more

up to us to hold up our torch. "So shines a good deed in a naughty world." We may find much beauty in any Wisconsin landscape. I have seen this state from the beautiful oak openings of the south to the muskeg swamps of the north and I have not yet within these state lines traveled beyond the border of Wisconsin beauty. If the Almighty has done so much through the centuries to make this state pleasant to look upon, ordinary gratitude would suggest that we refrain from spoiling his bounty, and that we do a little to add to it. For in this line of endeavor we are honored in greater measure than in anything else in the material world, by being made "workers together with God." We can make or mar landscape; and in the course of a lifetime we can do large work for good or evil in God's great panorama.

I would not speak of our duty to the landscape as the greatest force that constrains us to plant and prune, water and weed according to art. I prefer to present this as a privilege. Once you have experienced years of this fascinating work you take in more pleasure through the eye from form, color, light, shadow and composition in one minute than, uneducated, you took in in a month. This is living larger, broader. Making landscape also adds to length of days while it adds to their breadth.

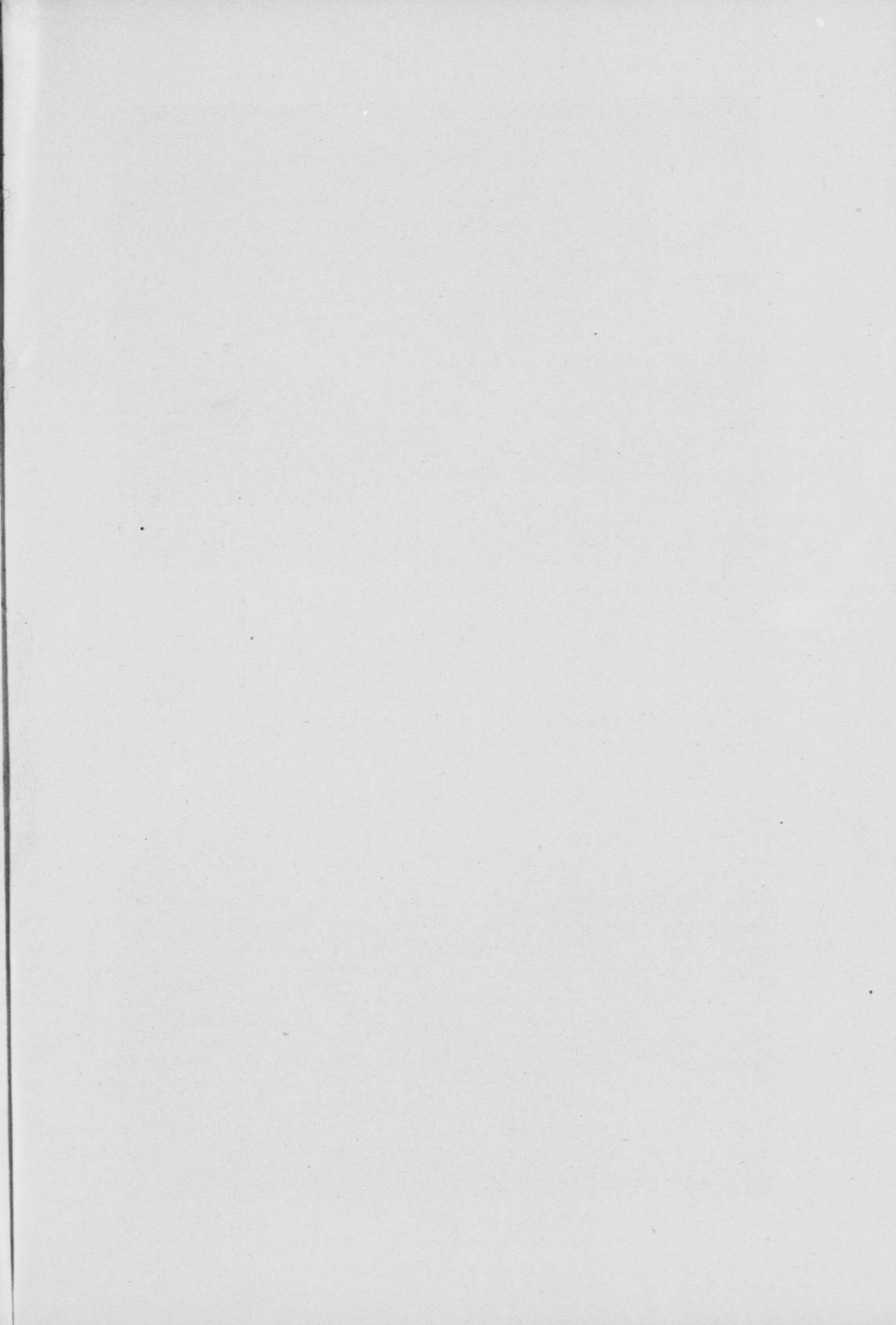
To be a fit model for others to copy, to be an inspiration to other people to improve their lives, is one of the rare joys of earthly life. I dare to believe it is one of the joys of heaven.

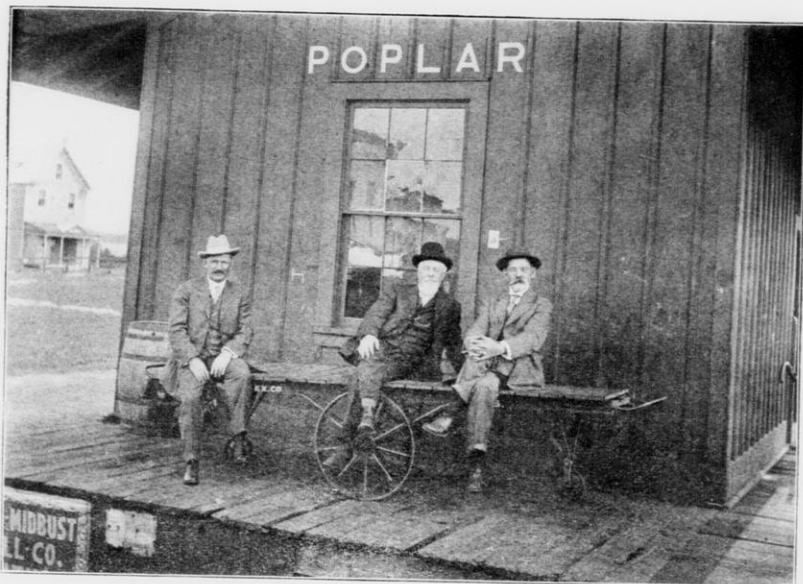
MORNING SESSION—WEDNESDAY, JANUARY 13.

ANNUAL BUSINESS SESSION.

TREASURER'S REPORT.

Mr. L. G. Kellogg: As many of you are aware, the fiscal year closes the 30th of June, and our appropriations are available on the 1st day of July. The Board of Managers has recommended that we make a report from the last annual meeting of 1908 until the 1st day of July, and thereafter for the full year, from July 1st to July 1st, otherwise our annual report will show what might be termed a fictitious balance.





The Trial Orchard Committee viewing the Poplar Orchard, Aug., 1908.



Cover crops, Horticultural Dept., U. W., 1902.
Dwarf Essex rape at left, oats at right.

Balance on hand February 4, 1908, \$4,031.71. Paid out upon vouchers properly signed by the President and Secretary, \$4,021.13; leaving a balance on the 1st day of July, 1908, of \$10.58. All of which is respectfully submitted.

REPORT OF THE CHAIRMAN OF THE TRIAL ORCHARD COMMITTEE FOR THE SEASON OF 1908.

WILLIAM TOOLE, Chairman.

Your committee inspected the trial orchard at Barron on Tuesday August 11, having driven from Cameron Junction with team, because better connections could be made in that way to continue our travel to the next trial orchard. The orchard is situated about three quarters of a mile from the railway depot—a little east of north. The location is on one of the leading thoroughfares and plainly to be seen by all who pass. A large sign with posts ready for placing was on the grounds, which will tell all who care to read that this is one of the trial orchards of the Wisconsin State Horticultural Society. Heavy wire netting was provided for fencing, and soon all the trial orchards of the society will be neatly fenced. It is the desire of the officers of the society and the trial orchard committee to have the trial orchards of the society a credit to the state of Wisconsin.

The situation is sufficiently elevated to give fairly good surface drainage, except that a small portion suffered from the excessive rains of last spring. The soil is clayey, and contains sufficient humus to insure good growth with a continuance of the care which it has already received.

The planting has been mostly of apple trees, and has been confined chiefly to such standard kinds as might be reasonably expected to succeed in that locality. The orchard had been recently seeded with oats for a cover crop, following the cultivation that had been done during the early part of the season by Mr. J. R. Ducklow, the owner of the property. Mr. Ducklow has shown such intelligent interest and willingness in carrying

out instructions in caring for the orchard that the society is fortunate in having the orchard under his care.

The trees of the first year's planting of one acre in 1906 have made a good growth the present season, with a few missing ones from causes which we could not ascertain, as the missing trees were of several varieties, and the trouble was not a question of hardiness. The planting of 1907, consisting of two acres, did not look as well as those of 1906 or 1908. It seemed that the difference in the quality of the nursery stock had caused the contrast. The trees planted in the spring of 1908 made a very good showing. Plum and cherry trees looked fairly well, except that there is some need for replanting.

THE POPLAR ORCHARD.

The next trial orchard visited by your committee was the one at Poplar in Douglas County. The party reached there the forenoon of Wednesday, August 12, by way of Superior.

The orchard is on the south side of the railroad with the principal wagon road between, and it is in full view of all who pass. We learned later when at Bayfield and Ashland that the trial orchard at Poplar is one of the points of interest that travelers on the railroad look for.

Your committee was most agreeably surprised at the general good appearance of the orchard. The trees which were doing well included a considerable portion of the first five acres planted. They have made a good stocky growth and look very promising. The plantings of the first five acres were done in the years 1904, 1905, and 1906. There were a number of Duchess trees bearing more than a bushel of apples each; Hibernial and Patten made an equally good showing. There were some fine Okabena apples on thrifty, healthy trees, and the Longfield trees in fruit looked very promising. A few Wealthy apple trees were fruiting and looked well, but in the average this variety made a poor showing. The North Western Greening trees have not a healthy appearance. Transcendent and Hyslop Crabs were fruiting and presenting a good appearance.

The fruit of that part of the state is decidedly later in maturing than is the case with the same varieties in the south-central

part, and could through later maturing and better keeping qualities extend the season of some varieties several weeks. A tree of Yellow Transparent in the yard of Mr. P. A. Peterson, the owner of the trial orchard grounds, held fruit which was scarcely ready for picking. The tree, which was probably eight or ten years old, showed no signs of blight and was fine in appearance. A portion of the orchard showed poorly for several reasons—the principal one being need of underdrainage in portions of it. This drainage was being done while the committee was there. The tenacious character of the red clay of this orchard has been described in previous reports. Poor stock received in different years and from different parties has caused disappointment.

The original plan of the orchard was for fifteen acres, but the committee of 1906 decided that it would be well to give up a portion of the land and establish an additional orchard at some other point. A release of three acres was secured, and a trial orchard was established at Maple, a station on the same line of railway about four miles east of Poplar. By the time this report is presented to the society an additional five acres will have been released, leaving seven acres to be continued as the trial orchard at Poplar. The schedule of trains necessitated a drive to the trial orchard at Maple.

THE MAPLE ORCHARD.

The Maple trial orchard is on land owned by E. G. Doherty, and is but a short distance from the depot northward. It is situated on the dividing ridge between the red clay basin bordering Lake Superior and the rest of the state of Wisconsin. The location is said to be one hundred seventy feet higher than the orchard at Poplar. The orchard ground slopes gently to the north. The soil is a gravelly loam, the clayey part of which is the red clay which is prevalent lower down. Two acres were planted in 1907 and one in 1908. The trees have been well cared for, and the ground had been seeded to a cover crop, shortly before the visit of the committee. Here again were noted examples of the relative values of different lots of nursery stock.

These two orchards are located on representative soils common to thousands of acres situated south of Lake Superior,

and so the lessons to be learned from them will be of great value to future settlers of this region. The present settlements are few and far apart, over a considerable stretch of country in this northern part of the state. The present outlook for fruit culture is encouraging; at Maple we found Yellow Transparent trees fruiting and doing well with no sign of blight.

BAYFIELD.

The continuance of our trip carried us to Ashland so it seemed best for your committee to visit the lands near Bayfield, because the paper by Mr. Knight has caused many people to look to our State Horticultural Society for information in regard to the fruit-growing possibilities of this part of the state. We reached Bayfield about midnight of Wednesday, and were ready to interview the place and people early next morning. A member of our party having the acquaintance of Mr. Robt. Inglis, the local express agent, our party was taken by him to see some of the fruit in the gardens of the town. The remnants of the season's picking showed that they can raise some very fine cherries in this region. Currants were very fine.

Secretary Cranefield and Mr. Inglis soon had a bunch of Horticulturists together, so our party, with Mr. Knight, Mr. Carver, and another gentleman as escorts, made a trip out into the country to see the orchards. The orchard of Mr. Turnquist has been fruiting several years, and is doing very well considering that a portion of the orchard has been in grass sod for several years. There was need of spraying here, yet there was a nice showing of fruit of several varieties. After dinner we visited one of the orchards of Mr. Knight, planted in the chopped-over lands and kept mulched with the mowings between the trees. This young orchard makes a very good showing, but in parts it was suffering from a visitation of grasshoppers. As soon as the wildness can be subdued the orchard will be thoroughly cultivated. Mr. Knight has another orchard of twenty acres on cultivated land, but the committee did not have time to visit it.

From all that we could learn it seems that the climate is modified by the lake influence to an extent favorable to the wintering of trees. The soil and altitude of this region are

variable, and so some discrimination needs be used in the selection of orchard sites. These chopped over lands need much labor to prepare them for cultivation. The conditions which we were able to examine made a showing favorable for fruit growing, but the different members of the committee know by experience that it takes time to prove all things. The abundance and luxuriant growth of wild strawberry plants over a considerable extent of this northern part of the state was very noticeable. These wild lands have been kept out of the market in the past by the lumber companies, but they are now offered for settlement.

MEDFORD.

We traveled toward Medford on Thursday night and next morning visited the fruit package factory of Edwards and Company. Here we found work going on in extent and variety much more extensive than we had expected to see.

In due time we drove out to the Medford trial orchard which is situated on the land of Mr. S. F. Harris. This orchard is on good soil with a favorable aspect, except that a portion needs some surface drainage to fit it for such seasons as the spring of 1908. The orchard consists of three acres planted in 1903, 1904, and 1905. Most of the trees are looking very well, although but few were in bearing this year. Good care is now being taken of this orchard, so that it will soon begin to prove up like the Wausau orchard is now doing. Judging from the general appearance of the country about Medford it seems as if orchards will do well in this section.

WAUSAU ORCHARD.

In the afternoon we reached Wausau and at once drove out to the trial orchard, which is on the land owned by Mr. Ed. Gensman. Our driver informed us that a great many apple trees had been planted in that section last spring, because of what has been demonstrated with the trial orchard. This orchard has been well described in previous reports. The location has been well chosen, and the site is conspicuous as well as accessible to those who wish to visit it. The orchard was seeded to clover last year, and the present season it was mowed

several times—the cutting being allowed to remain as a mulch. In an orchard of this size, so long planted, and containing so many varieties, all parts are not looking equally well, as might be expected. In some portions of the orchard North Western makes a good showing and in others not. Wealthy generally is not doing well. Thirty-eight Hibernial trees are very fine, but they are not fruiting this year. The same may be said of McMahon. Avista and Longfield, topworked on Virginia, made a good showing of trees and fruit. Newell trees are not doing very well; Repka shows up well in tree as also does Wolf River; Malinda topworked on Virginia made a good showing of fruit; Dominion Winter in fruit is doing fairly well; and Patten's Greening in fruit made a fine show. Okabena showed good trees; and Dudley, in three trees loaded with fruit, seemed to be a very desirable variety. The Lou apple and the Reitzburg, from Prof. Goff, made a fine showing in fruit. The Duchess trees had a healthy appearance and were loaded with fruit. The committee estimated that there were about two hundred bushels of this variety in sight.

If this orchard is held by our society a few years longer, and is as well cared for as now, it will be of great value as an object lesson to the people of this part of the state. Mr. G. F. Rich, who met with Secretary Cranefield and the committee to consider purchasing the fruit, said that, last spring, Mr. E. F. Wilson planted three hundred apple trees and Mr. Levenhagen one hundred fifty trees, making selection of varieties from observations of the trial orchard.

MANITOWOC ORCHARD.

A night's travel brought us, early Saturday morning, to Manitowoc where is located a trial orchard of five acres, planted in the spring of 1908 on the grounds of the county-farm. Here there was evident need of tile drainage, but Supt. Goedjen promised to have tile laid in the fall where indicated by the committee. The orchard had suffered some from extremes of wet and dry weather.

Through some misunderstanding the young trees had not received the necessary cutting back as Secretary Cranefield had directed. This lot of trees particularly needed judicious pruning, and for lack of it with unfavorable weather condi-

tions a number of trees made but a feeble attempt to leaf out.

Immediately on our return from the orchard Mr. H. F. Hubbard took the committee in hand to show them a seedling apple tree growing in a city backyard. The tree was indeed a surprise with its thrifty growth, luxuriant foliage, and fine show of fruit. The apples are of very large size and late fall in season. Mr. Hubbard says that it has many characteristics of the Duchess, but it is of much larger size and a much longer keeper.

STURGEON BAY ORCHARD.

Our next orchard inspection was at Sturgeon Bay in connection with the summer meeting of the State Horticultural Society, which was held at that place August 26th and 27th.

This was notably one of the best of the summer meetings which have been held by the society. While it is not in place here to mention in detail all about the meeting, it seems well to say that the people of Sturgeon Bay, under the direction of D. E. Bingham and A. L. Hatch, entertained their visitors in a most praiseworthy manner. The second day was devoted to sight-seeing for the visiting friends. In good time after breakfast teams were on hand to carry the party to various fruit farms in the vicinity.

Apples, plums of the Japanese and Domestic classes, and cherries all seemed to do finely here. Apple trees seem to come to bearing early. Plums were heavily laden with fruit, and cherry trees gave evidence of having borne an abundant crop. The accounts of yields of cherries were very interesting—the past season's produce of one acre of cherries planted three years ago by D. E. Bingham sold for \$85.00. One hundred cherry trees planted by Mr. Templeton three years before produced sixty cases of sixteen quarts each. The cherry crop of an eight acre orchard in 1907 gave A. L. Hatch \$3,600.00. Well cared for orchards showed paying results, but here as elsewhere are to be seen all grades of care and neglect in orchard practice.

The trial orchard of our State Horticultural Society was included among those visited, and was thoroughly looked over by your inspection committee. This orchard was planted twelve years ago, and it had been in grass sod eight years

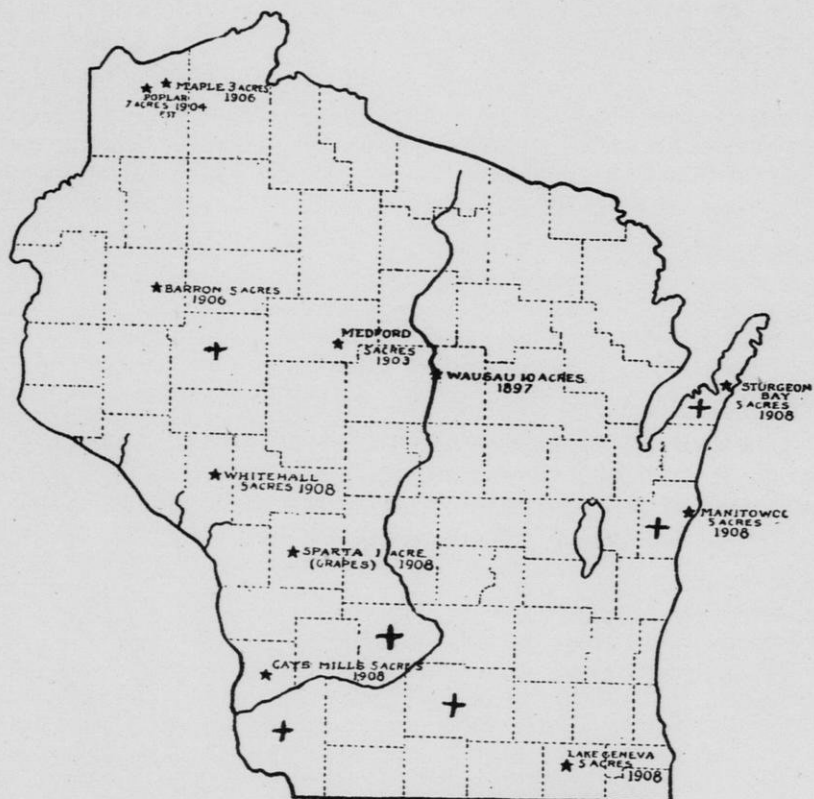
previous to the present season. The orchard consists of five acres which have been leased for five years at an annual rental of five dollars per acre.

The varieties planted are, North Western Greening and some Wealthy and Switzer. The sod was broken and subdued during the past summer. The orchard is in fairly good condition considering past treatment, but of course it will not compare with those that have been under continued good management. The output of this orchard will more than pay expenses before the term of lease has expired. It has been proved that fruit will succeed in this part of the state, but it is desirable here, as elsewhere, to show what can be done by rational orchard management. The object of taking charge of this orchard is to demonstrate that it pays to take care of orchards. The observations of your committee in different parts of the state leads to the conclusion that people as much need to know how to take care of an orchard as what to plant, and it would be well if our society could take charge of two or three other orchards in different parts of the state. The times of work in orchard management, under the direction of the secretary, may become field days when people, after published notice, can visit the orchard at the proper times to witness the best methods of pruning, spraying, cultural operations, and whatever pertains to correct orchard practice.

LAKE GENEVA ORCHARD.

The next visit of the committee was to Lake Geneva, via Zenda, on September 16th. The object of this visit was to establish an orchard in this old settled part of the state to prove that apples can be profitably raised in this section. Our party was met at Zenda by Messrs. Longland, Smith, and Dickenson, because the sites to be considered were situated between Zenda and Lake Geneva.

One site offered was fairly satisfactory, and was the only one, of those offered for our selection, which the committee thought available. As we were riding along the attention of our party was called by L. G. Kellogg to another desirable location, and all were agreed that here was an ideal place for a trial orchard. Our party returned by the way of Springfield, and in viewing a considerable stretch of excellent farming



Showing the location, acreage and date of founding of each of the trial and model orchards of the Wisconsin State Horticultural Society. Location of rural schools to be improved in 1909, indicated by +



country we noticed remnants of old orchards, which seemed to indicate that apple growing could have been successful here if efforts had been continued with the same perseverance that has been shown in other parts of the state. As plans could not be completed at that time, Secretary Cranefield was instructed to continue negotiations and report progress at the winter meeting.

The acting committee of the foregoing mentioned inspections consisted of R. J. Coe, L. G. Kellogg, William Toole, and Secretary Cranefield.

At Sparta a vineyard has been established with planting done in the spring of 1908, but it was not thought necessary for the committee to visit it this past season.

GAYS MILLS ORCHARD.

October 13th and 14th was the time chosen for inspection of the Gays Mills orchard, and the visiting party, consisting of Secretary Cranefield, D. E. Bingham, and William Toole, left Madison the forenoon of the 13th arriving at Gays Mills in the afternoon. The party was met at the station by Mr. J. A. Hays who owns the land on which the trial orchard is situated, and we proceeded at once to climb the hill on which it is located. We were informed that the orchard is about three hundred feet above the Kickapoo valley. The soil is calcareous clay loam, and the location was well chosen. The orchard consists of five acres, planted in the spring of 1908 to the following varieties: Northwestern Greening, Wealthy, Newell, McIntosh.

A part of the land was in brush and was broken for the first time in the spring of 1908. The trees make a very good showing, and there is scarcely a tree missing from the orchard. Mr. Hays is giving the orchard the best of care. He proposes, next spring, to plant a considerable orchard on his own account. This is an old settled region, and orchards here and there prove that apples can be successfully grown in this section, but there is not an orchard in this region which has been well cared for, and this trial orchard is intended to prove that apple growing in Crawford County can be made a good source of profit. Judging from the quality of the soil

and the topography of the country it seems as if commercial orcharding would pay well here. Mr. Hays said that a considerable amount of land as suitable for orcharding as that on which the trial orchard is located can be purchased in that section of the country for twenty dollars an acre. Here seems to be a good country for investment.

Those who have kept a continued interest in the trial orchards will have noticed that they may be divided into three classes: First, those which were established to make a general test of the climate in the several sections of the state, and to ascertain the relative adaptation of different varieties to those localities. Of this class are the orchards at Wausau, Medford, Poplar, and Maple. Next are those which have been planted where apples are expected to do well, to prove that it pays to give continuous good care to orchards from the start. Of these should be mentioned the orchards at Manitowoc and Gays Mills and the one proposed for near Lake Geneva. Of still another class is the one at Sturgeon Bay which will prove that it will pay to rescue from neglect established orchards.

These orchards must be cared for, and it is the intention of the present management that nothing shall be neglected. All operations will thus become demonstrations of the best orchard practice. So much has been done in the past and is being done at present to carry to the people the gospel of good orchard management that we realize that our society has been a pioneer in conducting what in other lines of education is now called Extension Work.

The President: In Mr. Toole's report he mentioned a seedling apple, the tree of which is growing in the city of Manitowoc and Mr. Hubbard is here, and I think he has a few of those apples with him and he might like this opportunity right now to show the apples from that seedling to you.

Mr. Hubbard: Gentlemen, I would like to say a few words regarding this grand apple. I have been an apple grower since I was a child and I discovered near my home in the city of Manitowoc, I think it was 1900, I discovered a tree growing and just beginning to bear fruit. It was a remarkable tree, I had never seen anything like it; I never have seen a tree the size of that that bore so much and such large

fruit that was salable, and I am here simply because I believe that this apple is worth the attention of fruit growers in the State of Wisconsin. I am not here for any money scheme. I invited our Secretary, who happened to be there along in the early summer, to come up and look at the tree, and he said he would be very glad to do that, but he hadn't time and some other time he would go up there and see it. I listened to him, he was very courteous and very kind; he said he supposed it was just as I said, but he was not aware of the fact that I am a mind reader and I saw, looking at his face, that he thought I was one of these seedless apple men, or that I had found something that I hadn't found, and I took it a little to heart, but he was so kind about it that I could not say to him, "Now, you think I am telling you a falsehood," but I went for him some time afterward. These gentlemen who have been speaking here, Mr. Coe and Mr. Toole and Mr. Kellogg and Mr. Cranefield were in our city and I invited them to drive up, a fifteen minutes' ride, and look at the tree, and they went up there with me and looked the tree all over and they said that they had never seen anything like it before. That is saying a great deal; these men have been growing fruit all their lives, so have I, and when you find a tree that you say you have never seen anything that compares to that you must have discovered something that is pretty good. The first apple I saw from that tree was in 1900. I cut the first apple in two and laid it on a piece of paper and drew my pencil around it. There is the pencil sketch, it is four and a quarter inches in diameter and that apple weighed just a pound. That was not the only apple that was on the tree. The next year following I got some scions from on that tree and I grafted a tree out in the country a little ways that did not seem to be worth anything, a tree about ten years old, it was a healthy strong-growing tree, and I grafted a new top and there is a picture I took about four years after I grafted. This apple for the last six years I have used in my family; it will keep in an ordinary cellar until the middle of February or March. Last year, my wife told me before I left home, that she had cooked the last apple on the 16th day of March. This year, the load being so heavy on the tree and the drought being so extreme, the apples all at once all fell to the ground. Some of them broke

right open as they fell. There is one of the apples. That is the ordinary size of the apple and there is one of the marks that would indicate that it is a seedling from the Duchess. I assert that it is a seedling of the Duchess. The tree is now seventeen years old this year, approximately, it bore eighteen bushels of apples; two years ago it bore by measure sixteen bushels of apples and two years before that it bore fifteen bushels of apples, by measure, of this sort and kind. Now, this apple I am not recommending as an eating apple, but it is said by our people in the vicinity that it is one of the best kitchen apples that they have ever known. To my taste it is too tart, I would not care to say that it is a fine hand-eating apple. I am very glad to have been able to show this to these fruit men and I think they will confirm what I say and they will confirm the fact that it is a remarkable tree. The foliage is immense, the leaves are nearly twice as large as those of the Duchess, somewhat of the same appearance, same terminal limbs and all its features are similar to the Duchess, except larger, stronger. That tree seventeen years old will bear eighteen bushels of apples like that without breaking down. The one that I have photographed here is a smaller tree; one or two limbs have broken off, that is a graft from this tree that bore this fruit. I would like to ask that this Society should name this apple and put it on the list of Wisconsin fruits. That is what I am asking and I should be glad to have this done.

The Secretary: I want to emphasize all Mr. Hubbard said in regard to that seedling apple. He is indeed a mind reader. I thought he was a seedling apple crank. You know the type of man that has a seedling apple, and thinks it is the only thing on earth. I did not go up to see it, because I had things that I thought were more important. If I had known what the apple was, I should have considered that the most important thing. I believe it is one of the most remarkable seedlings, that has ever come to the attention of fruit men in Wisconsin. This really is about the size of the apples as they were on the trees last fall when we viewed it and you see it is a late keeping apple. I have no doubt these apples will keep well until February and March, and the size and the vigor of the tree and the luxuriant foliage and everything combined mark it as a very remarkable seedling. As to

whether or not we can give that a name as it is presented for the first time, I am not prepared to say, but I will say this, that I hope under no circumstances will it ever be named anything else but the Hubbard when it is named.

Mr. Hubbard: I think you had better call it the Wisconsin or the Manitowoc or something of that sort. I have quite a number of children that will bear my name down to posterity.

Mr. Kellogg: I move that this be called the Hubbard.

Motion seconded by Mr. Cranefield and carried.

ANNUAL REPORT OF SECRETARY FREDERIC CRANEFIELD.

In compliance with Art. III of the By Laws I submit herewith a report of the affairs of the Society for the past year.

The year 1908 has been beyond doubt the most profitable in the history of our Society.

Financial: Beginning with July 1st our increased appropriation became fully available giving new strength and assurance to the officers and executive committee in widening our field of operations. While the law increasing our appropriation became operative early in 1907 a debt of \$1,500.00 which had accumulated during 1905-6 was paid, leaving us but little better off in 1907 than in previous years.

To know just how our funds are expended, should be, and no doubt is, a matter of interest to every member. The report of our Treasurer compiled to comply with the State law shows in detail how every dollar and every cent is expended. In addition there is submitted herewith a summary of a different kind showing by funds the ways in which the money is expended. Following our new plan of accounting this report like that of the Treasurer covers the period from July 1st, 1907 to July 1st, 1908.

During that time there was expended on account of Trial Orchards	\$1,630 83
Bulletins, circulars and advertising matter, printing	451 50
Postage	319 32
Summer meeting Aug. 1907 including premiums	291 73

Annual convention Feb. 1908 including premiums	933 82
Salary Secretary	1,200 00
Expenses Office Secretary	1,147 12
Office furniture	121 39
State Fair Exhibit	150 00
Farm Institutes	316 96
Premium Books (now abandoned)	43 30
Misc. inc. salary of Pres. and Treas.....	239 60

It should be kept in mind that these are lump sums only and that it is often difficult to assign an expenditure to a particular fund. As before remarked the detailed list of expenditure is shown by the Treasurer's report.

Following naturally an account of the expenditure of money comes an account of the progress of work, and in this we may all find justification for pride.

Trial Orchards: The Trial Orchard work is developing rapidly, there being now eleven orchards or stations in ten different counties.

Seven of these are in truth "trial" orchards or stations designed wholly for the purpose of testing the climate of central and northern Wisconsin.

The remaining ones at Sturgeon Bay, Manitowoc, Gays Mills and Lake Geneva are located in sections where the testing of varieties for hardiness and adaptability has already been done by private planters and in sections where there are good reasons to believe that large orchards properly cared for will prove profitable.

These then should properly be called "Model" or "Demonstration" orchards. James J. Hill, railroad president, statesman and far-seeing economist in a recent address before the National Farmers Congress predicting a shortage of the food supply of the nation and advising plans to overcome it recommended the establishment of a model farm in every county of every grain-producing state. The fact that our Society has been engaged in this identical line of work in connection with the fruit industry should prove a sincere cause for gratification on the part of every member and when we consider further that the extent and value of this particular line of work exceeds that being done by any other horticultural society or experiment station in the United States we may perhaps be ex-

cused if we "point with pride" to our "trial" and "model" orchards.

Membership: While the increase in membership under the reduced fees has not been as great as might reasonably have been expected, the number of both annual and life members is greater than last year. We now have 875 (date of Jan. 5, 1909) annual members all fully paid up to date and many one and two years in advance, and 120 life members, total 995. This is an increase of 173 annual and 22 life members over last year. The loss through failure to renew has been larger the past year than in any previous year since 1903, amounting to about 50. The membership is kept on a strictly cash-in-advance basis and no favors are shown; a member of the Executive Committee or even an officer is liable to be dropped if the fees are not promptly paid. The adoption of the life membership emblem has resulted in securing several new life members. Aside from a continuous active campaign by the Secretary there are two other factors both of which might be powerful aids in increasing our membership: first and foremost an earnest effort on the part of every member to secure at least one new member annually and, second: the co-operation of all of the local societies.

Local Societies: Four of the locals viz., Lake Geneva, Madison, Manitowoc and Baraboo now enroll their entire membership, the Sparta Association furnishes a fair percentage of its members while the remaining locals, Rushford, Omro, Algoma, Waupaca, Eau Claire and Lake Mills furnish but one or two per cent of their number as members of the State Society. In no other way could these local societies be so helpful to the state Society as in enrolling their entire membership each year through action of the local society and thus relieving your secretary of the necessity of everlasting appeal for members. Since writing the above two new local societies have reported, viz: Poysippi with 30 members and the Bayfield Peninsula Society with 114 members, the latter all enrolled in the State Society.

Farmers' Institutes: In co-operation with the Farm Institute department of the University this society maintained a lecturer who devoted his entire time to horticultural work attending 36 institutes, one-half of the expense being borne by

our society. Similar arrangements have been concluded for the present season and Mr. Bingham who served as our representative last year has been re-appointed and in addition Mr. C. L. Richardson will do special work.

Publications: As the demand for our bulletins has not increased but two have been issued, No. 13, April, 1908, Spraying, 31 pages, 16 illustrations, 2,000 copies.

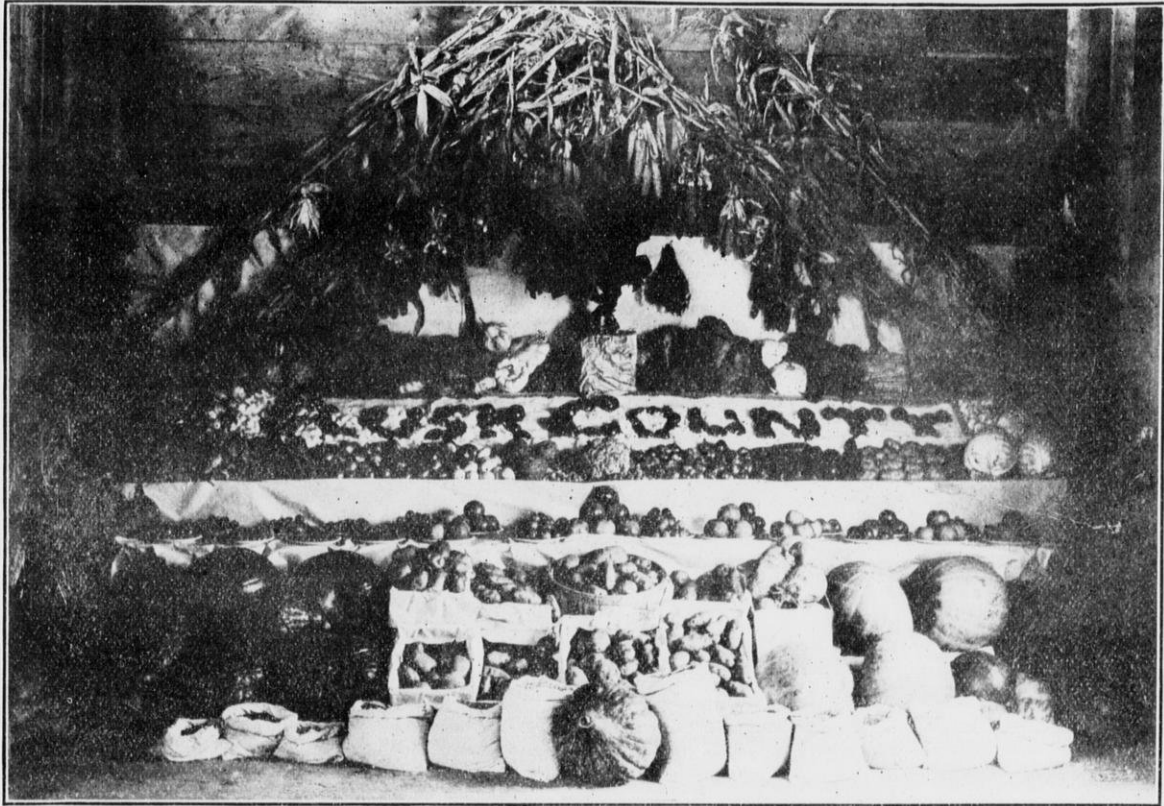
No. 14, Nov. 1908. Buying Nursery Stock, 24 pages, no illustrations, 10,000 copies.

The Summer Meeting: The meeting at Sturgeon Bay proved exceedingly valuable from several points of view. The attendance of members from different points in the state was larger than common, drawn no doubt by the fame of this region for the production of good fruit. The exhibits of both fruit and flowers greatly exceeded that of any previous summer meeting for several years.

The attendance and interest on the part of the Door County people was most excellent and in this respect the Summer Meeting of 1908 must for the present stand as the banner meeting of recent years.

Nor could the splendid welcome extended to all visitors by the Sturgeon Bay people be excelled. While the burden of details was assumed largely by Mr. Bingham and Mr. Hatch every resident of Sturgeon Bay seemed to act as a committee of one to make our stay pleasant and profitable.

On the second day the visiting members were wholly in the hands of the citizens of Sturgeon Bay. Said citizens took the delegates in hand early in the day and allowing them only a slight intermission for lunch, kept them agoing until after dark. Soon after breakfast a long string of carriages was in waiting and we were whirled over most of Door County—at least so it seemed. We were shown hundreds of acres of apple, plum and cherry trees bearing thousands of bushels of fruit. While the cherries for which Sturgeon Bay is famous were all gone, the trees were there thrifty, vigorous and glistening with Bordeaux mixture. In pruning, spraying and cultivating the growers here are right to the front. Shothole fungus, apple scab and codling moth are on hand here as elsewhere, but the growers give these pests no chance to gain a foothold. Thorough cultivation and spraying are both universally practiced with the re-



First Prize Exhibit of Fruit and Potatoes at Northern Wisconsin State Fair, Chippewa Falls, 1908.

sult that Sturgeon Bay is becoming to be known as the place where the best fruit is grown in Wisconsin.

In the afternoon a boat trip to Sawyer Harbor, the light-house, and ending at Idlewild, where a bountiful supper was served, ended a full and satisfying day.

State Fair Exhibit: This exhibit has now become a permanent feature and serves as an admirable means of advertising our work as well as being of considerable educational value. The two principal features of the 1908 exhibit were the exhibits in large quantities of fruits best adapted for general culture and the exhibit of fruits of Wisconsin origin, the latter attracting more attention than any other exhibit in the horticultural building.

County Fairs: Following the plan outlined in the last annual report arrangements were made with 24 county and district fairs in the state for the appointment of judges of horticultural products.

The Fair associations paid \$10.00 each to apply on expenses of the judge and the Society paid a reasonable per diem to judges. Reports submitted by the judges and voluntary commendations from many fair managers show that this is a very excellent line of work for our Society. To be satisfied that there was a field for trained judges one need only listen to some of the experiences related by the judges who were employed the past year. For instance when it is learned that in one place the Yellow Transparent has been entered for years as Snow and given 1st premium, we can see the need of a little missionary work. The work has proven so satisfactory that it will no doubt include all of the County Fairs next year. Following is a list of the judges and the fairs visited by each:

Dr. T. E. Loope—Chippewa Falls, Amherst.

F. W. Harland—Plymouth, Elkhorn, Jefferson.

Albert Reis—Lancaster, Manitowoc, Marshfield, Gays Mills, Monroc.

L. G. Kellogg—Baraboo, Fond du Lac, Chilton, Beaver Dam.

D. E. Bingham—Richland Center, Wausau, Menomonie, Viroqua.

Irving Smith—Stevens Point.

W. A. Toole—Westfield.

F. Cranefield—Madison.

Fakes and Humbugs: The work outlined above covers fairly well the regular work of the Society. In addition your Secretary has spent considerable time and money in an attempt to round up and put out of business certain firms and individuals who have been engaged in humbugging the farmers of the state.

Another way of stating this would be to say that efforts have been put forth to protect people from their own cupidity and ignorance.

Contract Orchard Fakir: The first example of this kind which came to my notice was the operation in Barron County of the solicitors for a firm which succeeded in securing orders for over 30,000 fruit trees, enough to plant 400 acres (largely apple) within a radius of a few miles of Barron City. This seemed like pretty good business for one firm with less than 1,000 salable trees on hand. A little investigation showed that the sales were made on the "Contract Orchard" plan, one-half down and one-half at some future time, good bankable notes accepted for the deferred payment. As an interesting variation of the plan in this case it was found that the buyers were told, and made to believe, that apple trees should be planted 12x12 ft. apart or 302 trees to the acre! So while the sales were nominally for a given number of acres in each case the contracts said nothing about *acres* only *trees*.

While it cannot be said that there was anything of a downright fraudulent nature in this, an investigation of the agents' methods showed a deliberative attempt to deceive. When this enormous stock of trees was delivered Mr. Bingham and your secretary were called in to pass on the quality of it. Without going into detail it may be said in general that the stock was exceedingly poor in every respect and labeled without any apparent effort to "truth and veracity." It resembled on the whole nothing so much as the spring clean-up of cull stock from a big nursery.

Through negotiations instituted by the representatives of this Society a compromise was effected covering the deferred payments and revocation of many of the large orders sufficient to effect a saving of several thousands of dollars to Barron County residents.

The whole Contract Orchard scheme under whatever guise

is more or less of a swindle and the swindlers practicing the game should if possible be put out of business. Members are referred to Bulletin No. 14.

Obtaining Money (Orders for Trees) Under False Pretences: While the Contract Orchard fakir is always abroad in our land and now excites no especial interest there appeared on the scene in Walworth and Racine Counties last summer an entirely new brand of "nature fakir" namely an agent, or perhaps a nest of them, who represented to prospective buyers that he was employed by the State Horticultural Society to give people instruction in the pruning and care of orchards, etc., etc.

Incidentally at the close of his "lesson" an order was solicited "to help pay expenses" etc. In the language of the street he was certainly a "smooth proposition" and did a thriving business until arrested at the instigation of your secretary. While the offense charged against this agent was punishable by a term in Waupun the District Attorney of Walworth County on advice from this office permitted him to enter a plea of "nolo contendere" and further proceedings were suspended on payment of fine and costs amounting to about \$75.00. It was reported that several other agents of the same firm were operating in the vicinity of Racine but as nothing further has since been heard from them it may be presumed that they have incidentally heard the report of the Circuit Court of Walworth County.

The agent arrested was D. W. Wood representing the Farmers' Nursery Co., of Tippecanoe City, Ohio.

In the pursuit of these and similar swindlers this Society can prove of inestimable benefit to the people of the state.

This covers in a general way the work done during the past year.

New Work: In addition to pursuing diligently the things already under way there has been outlined for the coming year at least two new tasks.

- (1) Public Demonstrations of Pruning and Spraying.
- (2) The Improvement of Rural School Grounds.

The first named may probably be carried on largely in connection with our Trial and Model Orchards with occasional incursions into new territory.

The embellishment of school grounds certainly offers an immense field for work and one that eventually may grow far beyond the resources of our Society.

The work has already been started but for one or two years it must be largely experimental, carefully feeling our way. When finally we have determined on some feasible plan founded on sound principles we can undertake the improvement of the 7,000 country schools of Wisconsin. Then if we find the expense too great to be borne by our society we can either ask for more funds or turn the work over to some other department.

In addition to these two new features there must be steady encouragement given to every branch of horticultural industry with special encouragement to the Co-operative marketing of fruits.

While we should not in any way abandon the idea of help to the amateur we should now devote the major part of our energies and funds to the development of commercial horticulture in this state.

We must aim to give the taxpayers of the state some return for their investment of \$8,000.00 a year in our society.

The small fruit industry will continue to develop steadily in sections best adapted to it. The communities like Sparta where Co-operation in marketing is practiced will be marked as the successful ones.

It is in the planting of fall apples that the future success lies in the tree fruit business in Wisconsin. In this we have practically the entire northwest for a market and several thousands of acres of fall apples might be planted within the next ten years with no fear of overstocking the markets.

That Wisconsin is destined to rank as a fruit state there can be no doubt. If there are doubters let them look over the Sturgeon Bay district, the Richland, Sauk, Winnebago and Waupaca County and Sparta regions carefully before making positive statements. From these points there were shipped last year 104,150 bushels of apples. From these points there was shipped last year 58,000 bushels of strawberries and other small fruits.

These figures do not compare with the fruit production of Illinois, Michigan and other states but considering the steady

development of our orchard and small fruit work in recent years and our opportunities, it is significant.

There is fully as much money to be made by raising fruit in Wisconsin as in any other state in the Union. That is to say by raising the right kind of fruit and placing it on the market in the right way. There is no money for anybody in raising scabby and wormy Wealthy or Duchess apples, bringing them to glutted local markets in wagon boxes and selling for 25c a bushel but clean fall apples honestly packed in barrels will always find a ready sale at profitable prices.

Neither is there any cause to become excited nor alarmed over the wonderful stories coming to us from the far west.

Occasionally we learn the real facts about these wonderful stories. We have listened, in this Convention hall, to reports of 1,000 and 1,500 dollars being made annually from an acre of apples in Oregon and other reports nearly as large. It seems that the railroads carrying these wonderful crops heard of the fabulous profits and concluded to share in the general prosperity of the region by raising their freight rates, when Behold! we find the Secretary of the Oregon State Board of Horticulture coming out with a flat denial of the big reports! He says that exaggeration has been the rule and not the exception; that instead of 1,000 boxes of fancy fruit per acre, the average grower really can find but 300 boxes while the remainder of the crop finds an outlet only through overstocked local markets or that of the Middle West; that the final average per acre instead of 1,000 dollars is from 150 to 300 dollars per acre. Such confessions as these must of necessity be good for the souls of the Hood River people and are besides a matter of encouragement to Wisconsin fruit men.

Your Secretary can find for you at least five Wisconsin fruit growers who actually sold more than \$300.00 worth of fruit from an acre last year and the field is wide open for 500 more who can do the same thing.

Believe! and you are saved. Believe in Wisconsin as a fruit state and you will win. Believe in our Society as a factor in making Wisconsin the fruit state it deserves to be and all will be well.

FRUIT PRODUCED FOR MARKET 1908.

An estimate of bushels of fruit shipped from six different points in Wisconsin in 1908. In this estimate no account is taken of the fruit sold in local markets.

	Apples. bu.	Straw- berries. bu.	Black- berries. bu.	Rasp- berries. bu.	Cherries. bu.	Plums. bu.
Baraboo.....	7,500					
Omro.....	2,000	1,500				
Eau Claire.....		5,000	2,500			
Waupaca.....	25,000					
Sparta.....	6,000	30,000	5,000	4,000		
Door county.....	3,550	10,000			3,500	
Richland county.....	10,100					650
Winnebago county.....	50,600					
Total.....	104,150	46,500	7,500	4,000	3,500	650

LOCAL SOCIETIES.

The following Local Societies have forwarded reports from which the following data has been compiled.

Name of Society.	No. of members.	No. members enrolled in state society.	Fee for members.	No. of meetings, 1908.	Average attendance.	No. of exhibitions, 1908.	Average attendance exhibitions.	Amount paid in premiums.
Baraboo Society.....	23	14	50c	3	20			
Manitowoc County Society.....	54	12	50c	5	20	2	40	
Oshkosh Society.....	41	6	\$1.00	10	20	1		\$400
Algoma Society.....	32	8	25c	12	40			
Omro Society.....	33	5	50c	9	50			
Eau Claire Fruit Growers Association.....	75	4	2.00	12	40			
Rushford Society.....	27	5	25c	5	10			
Madison Society.....	34	34	1.00	4	10			
Lake Mills Society.....	20	4	25c	4	30	1		
Lake Geneva Society.....	43	43	5.00	26	25	2	700	300
Waupaca Society.....	25	2	25c	4	25			
Sparta Fruit Growers Association.....	259	30	Stock Co.	13	150			
Bayfield Peninsula Society*.....	114	114	50c					
Poyssippi Society*.....	30							
Total.....	810	281						

*Organized December, 1908.

REPORT OF SECRETARY AS SUPERINTENDENT OF FIELD WORK.

This report will be confined to the briefest possible statements of facts and policies as the report of the chairman of the visiting committee covers in detail the general conditions of the orchards.

WAUSAU.

Orchard now in sod; grass cut three times during season and left on ground; crop fair for "off year;" varieties fruiting—Duchess, N. W. Greening, Longfield, McMahan, Patten, Wealthy, Dudley, Okabena, Hoadley, Dominion—in addition to many in the experimental plot.

Yield of apples estimated at 350 bushels. Cherries 406 qts. Plums fair crop.

Canker almost entirely subdued although an occasional case is discovered. 12 Duchess planted to fill vacancies next to highway.

MEDFORD.

Orchard in good condition, losses of trees very slight; a few trees bore for first time; orchard enclosed with woven wire fence and turned posts.

BARRON.

In the three acres set, (one acre 1906, two acres 1907,) 95 trees died during 1907 as follows:

One McMahan, 1 Wolf River, 7 N. W. Greening, 5 Longfield, 2 Tolman Sweet, 5 Fameuse, 3 Wealthy, 3 Gem City, 7 Early Richmond, 1 Iowa Beauty, 10 Utter, 10 McIntosh, 4 Scott Winter, 10 Patten Greening, 4 Rockford, 4 Hawkeye, 14 Montmorency.

The high percentage of loss of native plum, Patten Greening, McIntosh and Utter may be attributed to poor stock set 1907.

Two acres were set May 16th to 20th, 1908 as follows: 50 Duchess, 50 Hiberna, 60 Patten, 60 Wealthy, all from C. G. Patten & Son.

Stock excellent, ground rather dry but followed by good rains.

In addition several trees of South Dakota Hybrid plums were planted. These were sent by Prof. N. E. Hansen, Brookings, S. D.

MAPLE.

In the 2 acres set spring of 1907. 30 trees were found to be dead and were reset.

Three Wealthy, 1 Fameuse, 1 Iowa Beauty, 1 Dudley, 3 Utter, 9 Hammer, 5 Surprise, 5 DeSoto, 2 Ey. Richmond.

One acre was planted as follows: 25 Patten Greening, 15 Hiberna, 20 Wealthy, 18 Duchess, all from Geo. J. Kellogg & Sons.

Trees set 20 by 22 ft.

Weather good, soil in excellent condition.

Date of planting May 21-22.

POPLAR.

Planted 300 trees as follows:

One hundred Hiberna, 100 Duchess, 50 Patten, 50 Longfield, all from C. G. Patten & Son.

The total number of trees which died during 1907-426.

Of the following varieties all or nearly all of the trees have died.

Gem City, McMahan, Golden Russett, Tolman, Plumb Cider, Red Astrachan, Ben Davis, Pewaukee, Fall Orange, Seek-No-Further, Utter, Scott, McIntosh, Willow Twig, Lily, Ray Seedling, N. W. Greening, Wolf River, Pound Sweet, Windsor. All Cherries.

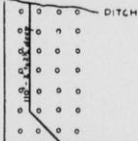
Of the above nearly all were 3 or 4 years planted. The heaviest and most surprising loss was in the case of the N. W. Greening and McMahan. These were extra large trees when planted and grew fairly well for a year or two but all died outright last year. This taken with the loss of the N. W. Green-

CHART
OF
DRAIN TILE
LAID IN
POPLAR ORCHARD No 4

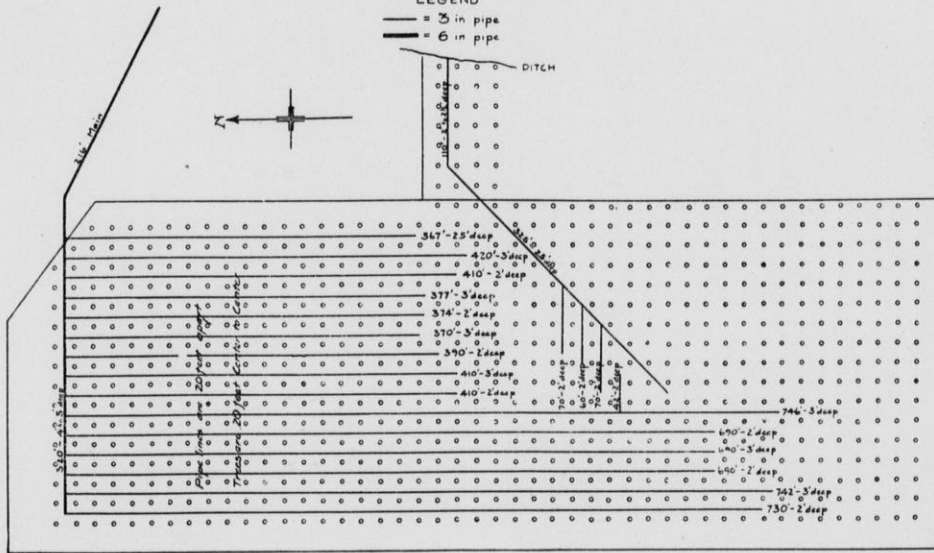
SCALE: 1 in = 50 ft SEPT. 12, 1908

LEGEND

— = 3 in pipe
— = 6 in pipe



PUBLIC HIGHWAY



ing at Maple and Barron would seem to place it in the undesirable list for northern latitudes.

Of the following 40 to 50 per cent have died each year: Fameuse, Haas, Malinda, Newell, Yellow Transparent and Martha Crab.

The following may be placed in the first order of hardiness: Duchess, Hibernial, Longfield, Okabena, Patten, Wealthy, with these crabs, Hyslop, Brier Sweet, Sweet Russett, Transcendent.

During the past year five additional acres have been released, leaving but seven acres in the Poplar Orchard.

Following instructions of the Trial Orchard Committee all but the upper part of this seven acres was tile drained. In all 8,807 ft. or 534 rods or 1 2-3 miles of tile were laid consisting of one 6 inch main 536 ft. in length laid at a depth of 5 ft. and 16 laterals, averaging 517 ft. in length of 3 inch tile. Of these one-half, alternate rows, are 2 ft. deep and the others 3 ft. The cost of tile and freight was \$175.00; cost of labor and superintendence \$387.19. The cost per rod including unloading and distributing, tiling and covering was a trifle over 73c. In this work we were aided very materially by the department of soil physics of the Agricultural College. The thanks of the Society is due to Prof. A. R. Whitson and his assistant Mr. Delwiche for assistance which was freely given at all times. It is to be noted that no charge was made by them even for expenses incurred.

The general condition of the Poplar orchard is now most excellent and the outlook is decidedly encouraging. Many of the Duchess, Wealthy and Hibernial trees bore for the first time this year, some of them carrying fully a bushel of fruit. For trees planted but four years and within the sight of the North Pole this in the language of the day is "going some."

STURGEON BAY.

The work of renovation was pursued diligently this season under the direction of Mr. Bingham. The trees were carefully pruned, sprayed as needed and the orchard thoroughly tilled. All this should serve to insure a profitable crop next year.

New Work: Two new orchards and one grape station were

planted in the spring of 1908, viz., at Gays Mills, Manitowoc and Sparta. In addition two other orchard sites have been selected by the Trial Orchard Committee to be planted in the spring of 1909. One of these is on the County Farm of Trempealeau Co. at Whitehall and the other $1\frac{1}{2}$ miles from Lake Geneva.

GAYS MILLS.

This orchard is located on the farm of J. A. Hays about 300 ft. above the Kickapoo river.

Three hundred seventy-five trees, 24 by 24 ft. Seventy-five each of Wealthy, N. W. Greening, McMahan, Newell and McIntosh.

Wealthy, N. W. G. & McMahan from C. G. Patten & Son, Charles City, Ia. Newell from Geo. J. Kellogg & Sons, Janesville. McIntosh from E. S. Welch, Shenandoah, Iowa.

Stock all first class except McIntosh which was very light and poorly rooted.

Soil clay loam with little gravel, part entirely new land just cleared, remainder in good condition following corn.

Trees planed May 5, 6, 7, 1908. Weather cool. Ground moist. Good rains followed.

This the first year of the Gays Mills orchard was marked by success in every particular. But two trees were lost and one of these made a good start being killed late in the season by fire blight.

MANITOWOC.

Five acres. Three hundred seventy-five trees. One hundred fifty Wealthy, and 75 each of N. W. G., McMahan, and Fameuse.

Wealthy, N. W. G. and McMahan from Patten. Fameuse from Stark Bros.

Trees 24 by 24 ft.

Weather very wet, trees planted in mud.

Planting done by G. W. Riegle.

Stock all reported good, especially Fameuse.

Owing to bad weather and very wet soil at planting time the

further fact that the tops were not sufficiently pruned about 50 trees failed to start. The extremely wet spring followed by an unusual draught was especially hard on this orchard. Owing probably to the unpruned tops a large part of the trees started but feebly until late in the fall. The outcome is problematical but with a favorable season next year the orchard may recover.

SPARTA.

One acre of grapes planted as follows: Four hundred Moore's Early, 200 Worden, 20 Moore's Diamond, 20 Delaware, 20 Campbell's Early, 20 Agawam.

All but 200 Moore's Early from E. S. Welch, Shenandoah, Iowa, these from T. S. Hubbard Co., Fredonia, N. Y.

Planting done by G. W. Reigle.

Welch stock reported very poor. Hubbard stock reported very good.

For some reason the growth of the vines was less than it should have been and the losses greater. The vineyard was well cultivated and next year should be well on the way to success.

QUESTIONS AND ANSWERS.

Ques.: (1) Will a heavy mulch of stable manure put over the roots of apple trees before the frost goes out have a tendency to hold the bloom back?

A Member: It will not.

Mr. Muhlenkamp: I think it will not. I have tried it four or five times and find it does not amount to anything.

Mr. Melcher: If it is put on the ground after it is frozen hard, I think it will.

Mr. Geo. J. Kellogg: I do not think it will. If you put it on where the influence of the sun comes up, the sun will bring the tree to blossom while the frost is on the ground.

Prof. Sandsten: I think Mr. Kellogg is entirely right. A number of experiments have been performed to test this question. It has been found uniformly that mulching will not retard blossoming in the spring and if all food material for the leaves is already in the tree above ground, it is simply a question of sunshine and warmth to start the tree growing.

Mr. Geo. J. Kellogg: The pruning in June should be done after the sap thickens, just about the 15th or 20th of June; a better time to prune for the producing of extra fruit buds is in March. That covers the ground, I guess.

Question (3): Is an old orchard just as well in grass as in cultivation?

Mr. Muhlenkamp: I do not think it is. I think an old orchard ought to be plowed anyway every three years. I have plowed my orchard now for the last twenty years regularly about every three years, seeded it in clover and it will naturally run into June grass in two years again and I always plow in the fall; generally do a great deal of pruning in November just before I plow. I like to plow in the fall, because the bark is tight to the tree, you can hardly rub it off with a whiffletree and I find the wounds will heal quicker if pruned in the fall than in the spring. I have pruned in June and after that I have done all my pruning in the fall.

Mr. Spurbeck: What depth do you plow?

Mr. Muhlenkamp: Well, I plow about four to five inches, have to plow deep enough so as to hold the plow solid to the ground. Years ago I planted my orchard too close, I have to cut out a good many trees now on account of that, and I plowed again last November and the ground was perfectly gray, you might say with roots that keep growing all the time and I kept cutting the roots, but I had plowed that way before and it did not seem to injure the trees at all.

The President: Would you prefer late fall pruning or late winter pruning?

Mr. Muhlenkamp: I think I prefer fall pruning, I prune in November, paint them over pretty heavy and the limbs make a bigger growth, covered the wound more than any other time of the year. If you have to prune in the summer, if a limb breaks off, you have got to cut that smooth with a saw, but I find they make the biggest growth by pruning in November.

Mr. Bingham: I think all who have had any kind of experience in pruning orchards realize that fall pruning, if done late, is considerably injurious to the tree, causing them to winter-kill where we have severe winters, where, if pruned in late winter we avoid all that trouble. You will find any nursery-

man that prunes late in the fall and does not leave a stub on that limb to protect from the body of the tree, that the tree will be injured in the body, causing considerable injury to the tree, and I think it would not be safe for us in Wisconsin to advocate late fall pruning, or summer pruning. Summer pruning has the disadvantage of taking considerable foliage off the tree and we know that is injurious. I think that there is only one proper time to prune for our commercial orchards and that is in the late winter, say March or April, before the sap begins to flow.

Mr. Hey: I am new in the business as an orchardist. I have a young orchard which I cultivate constantly with the disk harrow and other tools in the fore part of the season. They talk about running an orchard to grass or clover, how long ought I to continue to cultivate that orchard before putting it into grass or clover?

Mr. E. A. Smith: We have several thousand trees, and our experience may be of some worth to you. We plow very early in the spring, then we use a disk harrow and it is the very best means of cultivation; you can set it one side or the other if the trees are headed low, you can get under the trees all that is necessary and growing apples in a young orchard or an old orchard without cultivation is folly. One object of cultivation is to conserve the moisture, shallow cultivation will not do this, and a large tree needs all the moisture it can possibly get in this climate, and unless it is cultivated it will dry out quicker. We have one large orchard on a side hill so steep that we cannot cultivate; we dig around it some six feet in diameter, that is forked after every shower so that we save all the rain and the trees did fine and the fruits makes well, but in orchards that we did not cultivate, we have experimented extensively, they are comparatively a failure, because the fruit is very small and sour.

Prof. Sandsten: The question of cultivation is an individual question after all; it is a question of location of your orchard, a question of your soil. Young trees should be cultivated, but there are times when you cannot cultivate older orchards, especially if they are located on a hillside. The question of cultivation or no cultivation is certainly a question of individual orchards, yet as a practice on good, level land, cultivation of course is the ideal method of growing.

HOW I CAN MY GARDEN PRODUCE FOR WINTER USE.

MISS BLANCHARD HARPER Madison, Wis.

Mr. Cranefield has asked me to tell you how I can my garden produce for winter use, and I am willing to do so in order that the pleasure the results of my efforts have given to me and my friends may also be yours. I need not say pleasure only but should lay some stress on the profit also as may be shown in the one fact that Mrs. Geo. N. Knapp whose husband was formerly a professor in the College of Agriculture, made eighty dollars the first year she accepted any orders and the second year refused further orders when those received amounted to three hundred dollars. I have more than once been offered four dollars per dozen pints of canned peas, and cost of cans extra.

Any one who has had peas, corn, string beans, etc., canned at home will not willingly go back to factory goods. The flavor is exactly that of the fresh vegetable, and there is absolute certainty of purity.

Please bear in mind that I in no way claim to be the originator of the following recipes. Some of them are taken directly from Mrs. Rorer's *New Cook Book* and the ones for the corn were worked out by my friend, Mrs. G. N. Knapp, now of Stanton, Minn. In some cases I have changed or adapted a recipe, but in all cases, I shall as far as possible credit the originator.

Before giving the recipes, it will be necessary to consider a few preliminary preparations and to mention several cautionary "*don'ts*" to the unwary housekeeper. The preliminary care for canning vegetables must begin in the picking and handling in the garden, and the necessary directions will be given with the recipes—but the preparations in the kitchen are the same for all and can be given here.

This kind of canning is merely sterilizing food stored in sealed jars, and once the contents has been thoroughly sterilized there is no likelihood of spoiling for several years if the sealing is intact, except under one condition and that condition is

so important, so underrated, so generally ignored that I can hardly place too great a stress upon it—and that is *clean jars*, chemically clean jars. How many times do women canning use a jar stained by previous contents, or a mason jar cover roughened and whitened and corroded inside, by the fruit acids of last year's canning, how many stop to consider the possible chemical combinations and deposits made by the action of fruit juices on the metal under that innocent looking opal disc in the cover of the Mason jars. A woman will do every efforts put on a contaminated and corroded cover, ignoring the fact that in so doing she is merely adding unknown lead and zinc salts to her fruits, then wonders why they taste queer. On that account I prefer to use glass topped jars. There are a number of different makes on the market, as nearly every manufacturer of mason jars also makes the glass topped. The first cost of the latter is more than Masons but when balanced by corroded covers which must be renewed and spoiled cans, it comes out even about the second year. Never use a jar or cover that is stained. If hot soap suds does not remove the stain, soak the jar for 24 hours in strong solution of washing soda, if that fails use commercial hydrochloric acid one part water, two parts (can be used over and over again) or try sapolio, bon ami or dutch cleanser—and if all these fail use the jar for pickles or throw it away.

Never use a rubber ring a second time. Buy the best you can get. They should be soft, flexible, not too thick, and should not stretch in the boiling.

Never touch or handle the cover or rubber on a *sealed jar*. The steamed juices in cooling form a delicate cement between the cover and rubber, and this, if broken by turning or handling is liable to start a leak and admit air. Always lift a jar by the jar itself, never by the cover. Keep your jars in a cool, dry, dark place after canning.

Provide the following utensils: (1) A boiler or kettle with flat bottom and with a close cover. The kettle should be deep enough to take pint or quart jars and yet leave an inch of space above them. An ordinary tin wash boiler such as is used for clothes is the best when a number of jars are to be done—but when I have only one or two I use a soup kettle.

(2) Provide a piece of expanded metal lath, or galvanized wire netting having $\frac{1}{2}$ or 1 inch mesh cut to fit the bottom of the boiler. Or have a wooden rack made to fit the boiler. Either should lie flat. The object is to lift the jars from the bottom of the boiler to prevent them from bumping when the water boils hard.

(3) Plenty of new good rubbers.

(4) One or two extra jars for emergencies.

(5) Boil one or two gallons of water for ten or fifteen minutes after it comes to a boil. Cover it while cooling and keep it covered until used as shown later. The objects in boiling the water are threefold: (1) To sterilize; (2) To expel the air absorbed in it; (3) To throw down the lime if the water is hard.

With clean jars, rubbers, covers, and the above utensils one is ready to try the first vegetable.

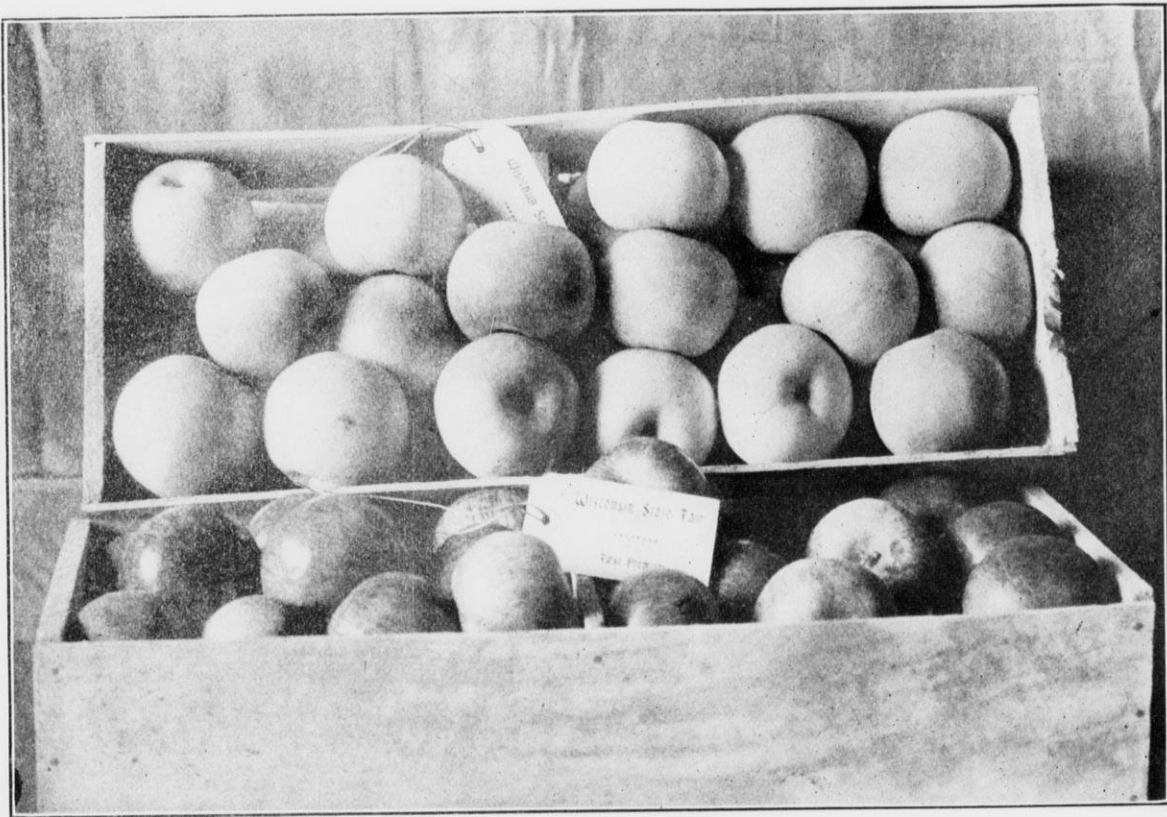
PEAS.

As the variety of peas grown makes a great difference in the result, I will state that my friend Mrs. Knapp tried canning "Telephone" peas and found them so unsatisfactory that she said "One would not know them for the same vegetable as yours." I always use the following varieties: Little Gem, Premium Gem and Advancer. Nott's Excelsior were not bad. Gradus I did not care for.

It is labor lost to can old peas. Peas for canning are better picked when *best* for the table but better too small than too large.

As peas ripen the development of starch makes them difficult to keep when canned. Canning also emphasizes any tendency they may have to a mealy flavor. Peas should be picked in the early morning, when they are cool. If the pods are dirty or the pickers of questionable cleanliness, *wash the pods before shelling.*

Fill a pint jar half full of the sterilized water, (if the water is put in first air is not imprisoned in the space between the peas, to cause trouble in boiling). With clean hands shell the peas directly into the jar until it is full. Add $\frac{1}{2}$ teaspoon of salt. Lay on carefully washed rubber ring, then the cover



First Prize McMahan Apples at Wisconsin State Fair, 1908.

loosely fastened. When all jars are ready place them in the boiler on the wire or wooden rack. Now pour in cold water until it comes to two-thirds the height of the jars, cover and put the boiler on the stove and boil two and a half hours from the time the water boils. Quarts should boil three hours. As soon as the period is up turn the fire out and *without delay* as quickly as possible lift the jars out one at a time and tighten the cover before lifting another to tighten. One bushel of peas makes 10-12 pint jars.

Never, never, never, lift a cover off the jar, as that would admit infection of moulds and ferments. Let me repeat again *do not delay* in tightening or sealing covers as soon as the water ceases to boil; if you do you can in a few minutes hear fresh unsterilized air carrying all sorts of germs of moulds and ferments sucking into your jar to ruin your work. I consider this and the question of clean jars and covers and good rings the crucial points of the whole process. Everything depends on them. Adapted from Mrs. Rorer.

ASPARAGUS.

I have never myself canned asparagus, but give herewith Mrs. Rorer's recipe for those who care to try.

Wash and trim the asparagus. Cover it with boiling water, boil fifteen minutes, drain, cool, and arrange it neatly, heads up, in wide mouthed jars; adjust the rubbers, fill the jars to overflowing with water that has been boiled and cooled; add a half teaspoonful of salt and lay on the tops loosely. Cook the jars in the boiler one and one-half hours as directed for peas and finish in the same way.

BEANS.

String beans should be picked before the dew falls in the evening or after it is dry in the morning, and kept in a cool place covered with a cloth or wet paper to keep them crisp. Mrs. Knapp and I have used the Stringless Green Pod, and the 1000-1 Refugee with the best satisfaction. I tried some wax beans one year but found them flavorless and unsatisfactory. String and cut the beans as for the table, throwing them into

cold water as they are cut, drain them and throw them into boiling water to cook until they can be pierced by a silver fork without breaking and they must cook no longer. If they are cooked too long at this stage they become soft and mushy in the cans. Remove from fire, drain immediately and pour cold water through them in a colander until they are *cool and firm*. If one has not a faucet or pump, three or four changes of water will be sufficient. Use plenty of water. This cooling is called blanching by some writers.

Half fill the jars with the sterilized water, then put in the beans which have been thoroughly drained and pack them in as firmly as one can without crushing, add one-half teaspoon of salt. Finish as directed for peas cooking one and a half hours

Young and tender beans require little more than scalding in the preliminary or first cooking, but old beans require sometimes fifteen or twenty minutes according to toughness and quantity. It is advisable on this account not to cook more than four or six quarts at a time for the preliminary cooking. Shelled Lima beans are done in the same way. Adapted from various sources.

BEETS.

Young beets may be canned either whole or sliced, and with or without vinegar.

MRS. RORER'S RECIPE.

"Select young fresh beets; wash, put them into boiling water and boil carefully for thirty minutes; then remove the skins, and pack the beets into quart jars. Add a half pint of vinegar to a quart of water that has been boiled and cooled; fill the jars with this mixture. Finish as directed for peas, cooking forty-five minutes."

After cooking the beets thirty or more minutes, I rub off the skins, slice the beets, run cold water through them, then half fill the jars with sterilized water, then put in the chilled beets and finish as directed after adding half a teaspoon of salt. They should boil an hour in the boiler. I have also canned young carrots and spinach in this way. The carrots were successful but as carrots can be so easily stored in the cellar in

sand, it is not necessary to can them. One can out of several that I did of spinach was successful. I am inclined to think that the others would also have been had I canned them in the orthodox way, but I tried cooking them in the hay box instead of the boiler and so failed.

CORN.

Many years ago Mrs. Knapp saw a paragraph in the Breeders' Gazette telling some woman's experience in canning corn. On that foundation she has since worked up the process hereafter given.

The paragraph mentioned particularly the fact that the corn must be gathered at such an hour of the day that there should be no moisture upon the husks from rain or dew, that after gathering the corn must be spread out separately to avoid all danger of heating or sweating by piling in heaps.

The other details of manipulation are Mrs. Knapp's.

As said before the corn must be dry when gathered, the weather must not be damp, rainy or cloudy. Mrs. Knapp would sometimes gather her corn when a thunder show threatened, but never after. The canning must be done only on clear pleasant days—never on a rainy day—why we do not know, but corn canned on a rainy day is more liable to spoil.

After gathering the corn should either be used immediately or spread out on the floor of porch, shed, or cellar. It should be husked and the silk brushed off with such a brush as is usually used to wash vegetables. After brushing the corn is cut from the cob with a sharp knife, not too close, and then the cob scraped down to get out the milk and pulp still adhering. As soon as enough corn is cut to fill a pint jar it should be immediately put in the jar and packed down firmly with a spoon or better still a stick just wide enough to go through the mouth of the jar easily and shaped something like a potato masher.

The jar should not be filled above the shoulder to allow for expansion by heat of cooking. Mrs. Knapp adds no salt. I use $\frac{1}{2}$ teaspoonful to each pint. As fast as filled each jar should be loosely covered and set in cold water to keep cool until all are ready for the boiler.

Do not put on any rubbers at this stage.

When all the jars are ready put the grating or rack in the boiler, fill with cold water to two-thirds the height of the jar and boil for two hours after it begins to boil. If during the boiling any of the jars boil over they must now be wiped clean. The rubbers are now adjusted making sure that no particle of corn be between them and the glass or the cover, and the cover must be fastened tight. The jars are then replaced in the boiler and enough hot water added to completely cover them. They must boil for one and a half hours longer after coming to a boil. The jars must not be taken out until thoroughly cool. Wipe jars clean immediately as the scum is difficult to remove when once dried. The expansion of the corn in cooking varies greatly in the different varieties of corn and also the age. And this expansion is to be guarded against because it sometimes blows the covers off. No water must be allowed to enter the jars. By tight or firm packing and so excluding the air from between the kernels, the expansion seems to be lessened; but an even more important factor seems to be the prevention of fermentation previous to cooking by working quickly and without interruption from the husking until the corn is in the jars and then keeping the jars standing in cold water.

There is another way of doing corn when it is to be used for cream soup, fritters and pudding, to score each row of kernels and then scrape out the pulp with a knife leaving the hulls on the cob; or this may be done more rapidly by a corn-scorer, which can be purchased for fifteen cents.

This pulp should be handled even more rapidly than the cut corn. The jars, owing to the great expansion which takes place in cooking, should be *only half filled*. It is impossible to cook it and have a jar more than half full when finished; hence it is more economical, cleaner and less aggravating to start with a jar half filled and get it all. It is cooked exactly as in the first recipe. Corn put up according to these recipes is delicious and well worth the effort.

Frequently in cooking the jars I myself do not follow Mrs. Knapp's method of tightening the covers and adding hot water to cover at the end of two hours; I cook the jars two hours, wipe them clean, adjust the rubbers, lay on the covers loosely, and cook for the additional hour and a half, then close at the end of the time. But I must admit that my way is not as

safe and sure as Mrs. Knapp's although I have never failed in it.

Mrs. Knapp and I have tried the following varieties: Early Crosby, Melrose, Portland, Stowell's Evergreen, Zig Zag Evergreen and Country Gentleman. They are all delicious—but the Early Crosby and the Zig Zag Evergreen seem to stand the canning better. Corn for canning should be picked when best for the table. Old corn like old peas is difficult to keep.

As a rule from 5 to 7 ears are required for a pint of cut corn, although we have used sometimes as many as ten and as few as four. It all depends on the corn.

There is another method of canning corn, which my friends have tried, and which is much more expeditious—keeps perfectly but the corn lacks the delicacy and flavor of Mrs. Knapp's recipe.

TOMATOES.

Tomatoes form an important element of modern cookery, taking their place as vegetable, salad, soups, purées and sauces for meats, macaroni, etc.

The method of cooking I use in putting them up belongs to Mrs. Rorer's recipes, but the flavoring and many other details is my own. "Adapted partly from Mrs. Rorer" I think should be the label on the following recipes. Use only good, solid, fleshy tomatoes.

STEWED TOMATOES.

Select tomatoes carefully, scald by dipping for a minute or two in boiling water to loosen skin, skin, and divide the tomatoes if very large. Put them in a porcelain lined kettle, and add enough onion juice or chopped onion to taste. I use one small onion to two gallons of tomatoes, and a half teaspoon of celery seed, eight or ten peppercorns and a tablespoon of salt. Boil until the tomatoes are as thick as are usually served on the table, then pour them into clean jars, put on the rings and cover loosely. Set the jars in the boiler, and fill to two thirds height of jars with water about the temperature of the jars of tomatoes, warm if they are warm, cold if they are not. Bring to a boil and boil ten minutes. Remove at once from boiler and tighten covers.

TOMATO PUREE FOR SOUPS AND SAUCES.

Cut up sound tomatoes and boil in an enamel or porcelain kettle until thoroughly soft. Strain and wash through a colander, then through a fine sieve. Return to the kettle and add for two gallons of tomatoes the following: 1 tablespoon salt, 12 peppercorns, $\frac{1}{2}$ teaspoon celery seed, 1 small onion chopped, 2 bay leaves, 6 cloves, 6 allspice, 1 bunch parsley. Cook slowly until tomatoes are thick, then turn into jars and finish as in preceding recipe.

To use these tomatoes:

For soup: Add an equal quantity of soup stock, butter and flour to thicken and a few drops, if one likes it, of kitchen bouquet.

For tomato bisque: Add a salt soup of soda to the tomato heated, then an equal quantity of hot milk, thickened with butter and flour and serve immediately.

For a sauce for chops, cutlets, fish, etc.: Merely heat tomatoes and thicken with browned flour and butter. A little left over gravy or soup stock may also be added with advantage.

TOMATOES WHOLE FOR SALAD.

Carefully select tomatoes of globular shape which will just slip through the mouth of the jar. Scald and skin them as directed for stewed tomatoes, take out the stem and core and slip the tomatoes gently into jar. Mrs. Rorer adds merely the sterilized water and a little salt but I add the following liquid.

The day before I stew a small quantity of tomatoes until soft and then set the kettle aside to cool and settle. The following morning I carefully pour off all the clear liquid floating on the top, strain it through a jelly bag, and boil it for a few minutes with onion, bay leaves, celery seed, peppercorns and parsley, then cool it and use it to fill the jars of whole tomatoes.

The jars are covered with rubbers adjusted and placed in the boiler with cold water. Bring to a boil and boil ten to twelve minutes only. Remove immediately from the boiler. When wanted to serve, drain off the juice, thicken with gelatine and use it to imbed the tomatoes either single or together.

NOTES.

A pint can packed as directed furnishes enough for six persons for one meal.

All my canning is done on a kerosene stove at a very slight cost for fuel.

The boiling of the jars must not be checked or interrupted. If the water around the jars boils away it must be replaced by boiling, not cold water. The water around the jars should be replenished if much boils away. Cold water if added cracks the jars.

My experience leads me to think that after one year canned vegetables commence to loose flavor decidedly. I have cans which after three years show no sign of spoiling, but never the less while perfectly sound would be found flat and flavorless. Every jar in which sterilized water is used should be filled to overflowing with the water before closing. Gummed labels will adhere more securely if applied before jars cool.

QUESTIONS AND ANSWERS.

Preceding the Convention forty-five questions were received by the Secretary and printed in the program, but owing to the limited time remaining after the completion of the regular program but few of these questions were discussed at the Convention.

These discussions are given below and also answers solicited by the Secretary from different members, following the Convention.

Question (2): Is it best to prune in last of May or first of June when in bloom and full flow of sap? Will wounds heal better?

Ans. No. Prune apple trees last part of March on a dry sunny day.—A. D. Barnes.

Ans. Wounds heal better with me in April than any other month.—A. J. Phillips.

Q. (3) Is an old orchard just as well in grass as in cultivation?

Ans. As a rule all orchards whether old or young should be

cultivated. Grass orchards will not prove profitable. There are conditions where it is necessary to keep the orchard in sod especially when the land is too steep for cultivation or where there is danger of washing away of land, but only under these conditions should the orchard be left in sod.—Prof. E. P. Sandsten.

Q. (4) Is it a fact that a tree will live longer if grafted on the whole root as it comes from the seed?

Ans. No. An apple tree will not live as long on a whole seedling root as it will on a piece root-graft if short root and long scion are used.—A. D. Barnes.

Ans. If the seed is planted where the orchard tree is to stand and top grafted or grafted at the collar and never dug, it is more favorable for a healthy long lived tree; there is no whole root system if the tree is ever pulled or dug.—Geo. J. Kellogg, Lake Mills, Wis.

Q. (5) Who has tried irrigating strawberries in this state and with what success?

Ans. Wells Bros., of Milton also parties at Sparta, Wis., with varying success. Generally the supply of water has not been sufficient. Irving Smith has used city water for irrigating when gardening at Green Bay.—Geo. J. Kellogg.

Q. (6) Which is the most suitable package for marketing apples in Wisconsin, the basket, barrel or box?

Ans. I prefer baskets to any other package. Purchaser can see goods.—A. D. Barnes.

Ans. The basket for choice early apple. The box for extra choice apples that command a fancy price. The barrel for No. 1 good marketable stock for long shipments.—Geo. J. Kellogg.

Ans. In barrels, (new).—A. J. Phillips.

Q. (7) Would it pay to grow grapes for market in Central Wisconsin on favorable sites?

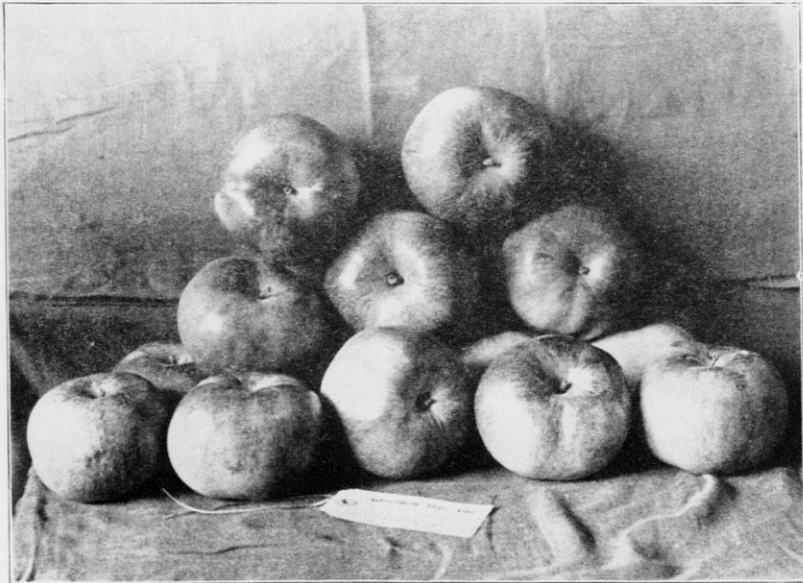
Ans. Yes. If you confine the varieties to extra early sorts but it will not pay to compete with the Lakeshore, with Concords unless they can be ripened early and sold before the eastern crop comes on the market.—Geo. J. Kellogg.

Ans. In my opinion it will.—W. H. Hanchett.

Q. (8) Which is the best paying crop for a series of years, strawberries, raspberries or blackberries?



Portion of 1908 State Fair Exhibit.



Some prize apples at the Wis. State Fair, 1908.

Ans. Strawberries bring the quickest returns, but you need Raspberries and Blackberries to prolong the season and hold the pickers. For short answer I would say—all three are best.—Geo. J. Kellogg.

Ans. In my experience the blackberry has paid best but this is a matter of location and the small fruit grower should grow them all.—W. H. Hanchett.

Q. (9) Tell exactly how pines and arbor vitae may be grown about our homes in city or country?

Ans. Evergreens should be planted in spring as soon as soil is in proper condition for general planting. The roots should not be permitted to become in the least dry between the time of taking up and replanting. This precaution against root drying is even more necessary with evergreens than with other trees and shrubs. When planting, the soil to be placed about the roots must not be dry nor yet muddy. There must be no open places among the soil about the roots. If the trees when established are inclined to make too open growth the leader and overgrowing side branches should be shortened. Mulching is desirable for evergreens and if the young trees are small when planted out, a temporary shading. Be very careful not to plant evergreens too near walks, drives, other trees or buildings and never between the house and a desirable view for it is not well to remove lower branches from evergreens.—Wm. Toole.

Q. (10) What is the best variety of tomatoes to grow for the canning market?

Ans. New Stone, Matchless and Beauty in order as named.—M. V. Sperbeck.

Ans. We are not packing tomatoes at any of our Wisconsin plants and therefore are not in a position to give you information as to the seed best adapted to this climate. We are however operating a tomato plant in Indiana where our experience leads us to believe that the Livingston is the best tomato for the main crop. We use a small amount of the Perfection in certain cases.—Waukesha Canning Co.

Q. (11) What are the best varieties of sweet corn, early, late, and medium, to grow for market?

Ans. Early, Ihrig's Nordheim; Medium, Perry's Hybrid; Late, Stowell's Evergreen.—M. V. Sperbeck.

Q. (12) What is the best fertilizer outside of barnyard fertilizer for cucumbers? Is land plaster a benefit to cucumbers?

Ans. Cucumbers need a complete fertilizer as a general rule. There are conditions of soil where a complete fertilizer will not be required, but generally speaking it is best to apply a fertilizer composed of nitrogen, potash and phosphorous. A good mixture would be the following per acre: 150 pounds nitrate of soda, 200 pounds sulfate of potash, and 300 pounds of desiccated bones. If small quantities are needed, a table-spoonful of nitrate of soda, two of potash, and three of bone meal may be added to each hill, but it is better to mix these with some soil before they are applied, and be careful not to put these too close to the stem of the plant.—Prof. E. P. Sandsten.

Ans. Would say land plaster is a benefit and hard wood ashes well mixed with the soil is good.—M. V. Sperbeck.

Q. (13) What is the best remedy for the little striped bugs on cucumbers?

Ans. A mixture of land plaster and Paris green, 100 lbs. plaster, 1 lb. Paris green or that proportion sifted on the vines is the best remedy I know of. Use a common flour crank sieve. Dust during bug season.—M. V. Sperbeck.

Ans. A little striped cucumber beetle can be kept in control by the use of arsenate of lead at the rate of 3 lbs. to 50 gallons of water. For small quantities, the same proportion of poison may be used. We advocate the use of arsenate of lead because it will adhere and is not easily washed off by rains. The application must be made quite frequently in order to be effective.—Prof. E. P. Sandsten.

Q. (15) Are dry powder sprayers a success?

Ans. No.—Prof. E. P. Sandsten.

Q. (16) Please state the best remedy for shot hole fungus, especially on cherry trees, when and how applied in order to retain healthy foliage till frost time?

Ans. The shot hole fungus on cherries can be controlled by spraying with Bordeaux. The first application should be made when the buds are open and the second when the leaves are nearly full grown. This is the most critical time as the fungus gets its work in about the time the leaves are full grown. It

may be necessary to make three applications, but ordinarily two are effective against this disease.—Prof. E. P. Sandsten.

Q. (17) Does our state inspection law meet the requirements of the planter of nursery stock, or the nurserymen, and if not, what are its defects?

Ans. No. Imported goods—not home grown goods—need inspection. Better leave out inspection and compel spraying and destroying of blighted trees and varieties subject to blight.—A. D. Barnes.

Ans. The inspection law fails in that it does not guard against introduction of injurious insects and diseases from other states to the grounds of amateurs.—Wm. Toole.

Q. (18) Does the state law requiring the nurserymen or dealer in tree or plant life, to state where everything is fully grown, serve the purchasers' welfare or punish those who willfully disobey its command?

Ans. The state law requiring statement of where stock is grown is unnecessary and punishes honest nurserymen.—W. Toole.

Q. (19) Does it pay to apply sodium-nitrate to strawberries just as the berries are starting to ripen, or a little before, when you have barn-yard manure which was applied in the spring quite heavily?

Ans. It does not pay to apply nitrate of soda to strawberry beds if the beds have been fertilized with barn-yard manure in the spring. Still, good results have been obtained by the use of nitrate of soda when the berries are one-half grown. It will do little good unless the weather is sufficiently moist to get the nitrate into solution. If the strawberry bed has been heavily manured with barn-yard manure, the application of nitrate of soda is not profitable or advisable.—Prof. E. P. Sandsten.

Ans. If heavily manured don't apply sodium nitrate at all; if it is needed apply in early spring.—Geo. J. Kellogg.

Q. (20) When is the proper time to spray for apple tree aphid?

Ans. The best time to spray against tree aphid is when the leaves are from one-half to two-thirds grown. The young lice have just hatched and are very soft and easy to kill.—Prof. E. P. Sandsten.

Q. (21) What can be done to exterminate the contract orchard schemer? The man who collects more than a fair price on delivery and either one-half the fruit the fifth year or from 17 cents to 35 cents per tree?

Ans. In my town and in Norwalk they charged about $37\frac{1}{2}c$ per tree on delivery and then took notes for as much more in 5 years without interest when by inquiring of men who were posted they could have bought good trees for 25c each. A certain class want to be humbugged and its no use to try and help them.—A. J. Phillips.

Ans. Sustain the work of the State Horticultural Society in that line and keep the secretary informed. Induce people to become members of the society and promote the diffusion of more horticultural knowledge.—Wm. Toole.

Q. (22) Cranberry vines when left exposed through the winter, suffer from what is known as winter killing about the same as strawberry vines, blackberry and raspberry bushes and peach trees, and sometimes apple trees. What is the cause of this, the low temperature, or the continued dry winter winds? What are the conditions that favor winter killing and what can the grower do to prevent it?

Ans. In reply to the 22nd question I would say that in the case of the winter killing of cranberry vines, it has been quite conclusively proven at the Cranberry Experiment Station during the past year that the chief cause of injury to vines is lack of proper protection, or, in other words, exposure to severe weather. At the Experiment Station portions of the ground had been growing vigorous vines for seven or eight years without any additional sand in which the vines could set root, consequently leaving somewhat of a mat on the surface. A number of the same plots had been sanded in March, 1905, the depth of sand applied being from one to two inches. During February, 1908, the winter flood, which is the customary winter protection for the cranberry, was by some means allowed to get away from the Station, and no further protection could be applied until after the spring rains. Consequently portions of the Station were exposed during very severe weather the latter part of February, and the result was a great deal of winter killing on vines which had had no sand applied during the last seven years. On the plots which had been

sanded, although suffering slight injury, the demarkation was so clear that it was very conclusive evidence that the winter killing had chiefly been due to exposure to severe weather during February, and this undoubtedly can also be considered due to some extent to the very dry, cold winters of the Central section of the state, causing very rapid evaporation, while the sap flow undoubtedly was unable to supply the vines fast enough to make up for the evaporation, with results as above stated. The only remedy in the case of the cranberry would be to insure an ample winter protection by means of good floods and water supply at hand that will enable the application of any extra water when the flood has disappeared by seepage.—O. G. Malde.

Q. (23) Would it not pay to maintain at the Agricultural Department of our University a Plant Pathologist who would be free to work outside the University in teaching our farmers and horticulturists the best methods for combating the diseases of cultivated plants? If so, should not a bill for that purpose be introduced at this session of our legislature?

Ans. There should be a chair of Plant Pathology connected with our Agricultural College. Also an Entomologist and it is our duty to see that our legislators make proper provision for their establishment and maintenance.—Wm. Toole.

Q. (24) What are the best six varieties for a commercial apple orchard in Wisconsin?

Ans. Duchess, Wealthy, N. W. Greening, Malinda, McMahan and Hibernial in the far north. Southern part Fameuse.—A. J. Phillips.

Ans. Duchess, Wealthy, McMahan, Lowland Raspberry, N. W. Greening, Okabena.—A. D. Barnes.

Ans. Duchess, Wealthy, N. W. Greening, McMahan, Snow, Dudley. There are others perhaps as good. The Dudley is not propagated extensively yet but promises to become a commercial variety of considerable value.—D. E. Bingham.

Ans. Lowland Raspberry, Duchess, Wealthy, Plumb Cider, McMahan & N. W. Greening.

Q. (25) What is the best commercial fertilizer for general use in a garden, both vegetable and fruits and what quantity should be used?

Ans. The use of commercial fertilizers in connection with

gardening in Wisconsin is not profitable nor ordinarily advised. What our garden soil needs is humus or vegetable matter and commercial fertilizers will not supply this substance. Phosphorous is generally the chief element lacking and for this reason the treatment with desiccated bones is more beneficial than the application of any other fertilizer.—Prof. E. P. Sandsten.

Ans. So much depends on the needs of the particular soil in question that I would not care to advise. The chances are that some brand containing all of the three most necessary elements would in most cases give best results.—W. H. Hanchett.

Ans. *Potato Phosphate* for fruits is best we know. 500 lbs. per acre. No one can tell without trial on your own ground and that very judiciously. Pres. Cook of Michigan said *Acid phosphate* at the rate of 500 lbs. per acre. Ashes are good only on light soils. There is no fertilizer equal to stable manure which has been kept under cover and the liquid preserved with the solids. Keep it covered unless applied fresh. Geo. J. Kellogg.

Q. (26) After top-working young hardy apple trees, by "budding" how many of the small twigs below bud on limb should be removed the first year, or should they all be left on?

Ans. In top grafting, work only one third of the tree each year and watch the suckers. Don't let them rob the scions. I don't push the grafts too rapid so as to produce a tender growth.—Geo. J. Kellogg.

Ans. About half and balance the 2nd year.—A. J. Phillips.

Q. (27) Will stripping the leaves from young apple trees, of rather tender varieties, early in the Fall, prevent Winter killing of the tips of limbs to any extent?

Ans. Yes. Most assuredly if done at right stage of maturity.—A. D. Barnes.

Ans. Yes. Taking off the leaves will ripen up the wood.—Geo. J. Kellogg.

Ans. The removing of leaves of a tree is an injury and will cause winter killing rather than prevent it.—D. E. Bingham.

Q. (29) What culture is necessary for horseradish to obtain large roots? What soil? What size roots to plant? How long from time of planting to time of digging?

Ans. Plant on very rich land.—A. J. Phillips.

Ans. The culture of horseradish should be thorough. The soil should be a very rich, sandy loam. Medium sized roots 6 inches long should be planted in spring and dug the next fall.—M. V. Sperbeck.

Q. (30) Can we dig up strawberry plants and immediately reset the ground and secure a good stand of plants?

Ans. No. The ground should be worked two years at least with hoed crops.—Geo. J. Kellogg.

Ans. It can be done but is not advisable.—W. H. Hanchett.

Q. (31) Can a pedigree be established for a strawberry plant with named parentage?

Ans. Yes if the parentage is known beyond doubt and an association of some kind is organized to decide on and record this parentage. It appeals to me as a useless proceeding however.—W. H. Hanchett.

Ans. This is a mooted question. I have never found anything in favor of Pedigree Plants from Kellogg of Michigan though I have given them careful trial twice; plants should be carefully grown from new settings and never taken from bearing beds.—Geo. J. Kellogg.

Ans. A pedigree can be established for a strawberry or any other plant if its ancestry is known and recorded but to call the continued increase of the same variety the establishment of a pedigree is an erroneous application of terms.—Wm. Toole.

Q. (32) If not can a firm truthfully list all plants as thoroughbred pedigree plants?

Ans. A firm advertising all plants as pedigreed plants as that term is generally understood is using deception, but where the firm explains in its advertisement what they wish the public to understand as their application of the term, there is no deception provided their plants are selected according to their interpretation of the term.—W. H. Hanchett.

Ans. No.—Geo. J. Kellogg.

Ans. The answer to No. 31 answers this question also.—Wm. Toole.

Q. (33) Who knows anything about the so-called Wisconsin Spy apple?

Ans. The Wisconsin Spy was originated by Henry Johnson of the Town of Eden, Fond du Lac Co., Wis. Was dug up by

Johnson and planted in orchard. Was propagated by Clarke Hewitt of Waupun, Wis., quite extensively for a few years. Now discarded and not given in lists of Wisconsin varieties.—A. D. Barnes.

Ans. I have fruited it for 15 years on trees bought of Hewitt at Waupun near where it originated. Have fruited it top worked for 8 years and never had but one satisfactory crop. Fruit is, when matured, good in quality and is attractive in barrel.—A. J. Phillips.

Ans. Mr. A. D. Appletree Barnes.

Q. (34) Where are the thousands of trees of this variety, which are sold in Wisconsin by eastern nurseries, propagated?

Ans. I don't think there are any trees propagated. Believe they are put out under a fictitious name or by mistake.—A. D. Barnes.

Ans. God only knows and I do not think he troubles himself much about it.—A. J. Phillips.

Ans. Don't know.—D. E. Bingham.

Q. (35) Is there a fall bearing strawberry that can be recommended?

Ans. Yes. Pan America and Autumn.—Geo. J. Kellogg.

Q. (36) Is the Haymaker raspberry hardy in Wisconsin and is it superior to the Columbian?

Ans. In my experience the Haymaker raspberry is about the same as Columbian as regards hardiness but not its equal for quality.—W. H. Hanchett.

Ans. I don't think Haymaker is as hardy as Columbian or any better. It is not grown much in the west. Columbian needs protection in hard winters but if killed back to within 1 foot of the ground it will often give a paying crop.—Geo. J. Kellogg.

Q. (38) Do electrical storms injure the foliage of fruit trees?

Ans. No.—Prof. E. P. Sandsten.

Ans. Of course if the electricity comes in contact with the foliage or close enough to burn the leaves.—A. D. Barnes.

Q. (39) Should fruit trees from southern nurseries be planted in Wisconsin? Will they do as well as northern grown trees?

Ans. No, not in my experience.—A. J. Phillips.

Ans. Trees from southern nurseries if true to name and not overgrown are all right for Wisconsin if properly handled from and to digging and planting. If carefully handled the trees grown nearby have the advantage of less exposure. Our home grown trees are seldom over grown, often not well grown. If the buyer is a judge of well grown nursery stock he may safely accept good stock which has been grown outside of the state.—Wm. Toole.

Q. (40) Is it profitable to thin the fruit on trees that overbear? If so, when and how?

Ans. Yes. The thinning should be done when the apples are about the size of a small crab apple or immediately following what is known as the June dropping.—Prof. E. P. Sandsten.

Ans. Yes. It will pay to thin fruit. Start thinning as soon as it can be determined what is going to develop, picking off small imperfect fruit spacing to about 2 to 3 inches. Use ladder and keep at it. It will pay.—D. E. Bingham.

Q. (42) How about the Wragg cherry? Is it hardy in the southeastern part of our state? Is it a large black cherry? Is there a better late black cherry for this section of our state?

Ans. I am disgusted with the Wragg cherry. Not hardy for our county. Neither do I know of a black cherry that is hardy or productive in Wisconsin. —A. D. Barnes.

Q. (43) What is the best spraying outfit for a farmer's orchard?

Ans. The best spraying outfit is a barrel spray pump and will cost anywhere from \$12.00 to \$24.00.—Prof. E. P. Sandsten.

Q. (44) Is the brandywine raspberry a good variety for the farmer's garden?

Ans. Yes. Brandywine is choice. Midseason and productive. Turner, Miller, Ruby and King are earlier and in some points better. Loudon and Cuthbert are later and better near market.—Geo. J. Kellogg.

Q. (45) Of the two varieties, which is best, the Miller or Turner raspberry; first, as to yield; second, quality?

Ans. Miller is better quality and yield about like Turner. It is the manner of growth that makes the yield, the man behind the cultivator and the man that applies the manure.—Geo. J. Kellogg.

GEO. J. KELLOGG.

THE ONLY LIVING CHARTER MEMBER OF THIS SOCIETY. THE FOLLOWING IS AN EXTRACT FROM A LOCAL PAPER OF MARCH 21ST 1908.

Extract from Janesville Gazette: Yesterday, March 20th, (1908) was the 80th birthday of George J. Kellogg, who has lived in Janesville since 1852. The story of Mr. Kellogg's life recalls the times when this part of the country was new and mostly unsettled, and when Indian raids in the West were an ever present danger and the prairie schooner was the usual method of transportation across the Great Plains. He crossed the Great Plains in '49 driving five yoke of oxen, dug gold in California and returned to Wisconsin by way of the Isthmus of Panama. Appended is a letter from Mr. Kellogg.

Janesville, Wis., March 20, 1908.

Editors Gazette: I am rejoicing in a shower of four-score birthday letters. I was born in Cicero, N. Y., and received my first education in Fulton, N. Y.; emigrated to the Indian land of Wisconsin, Aug. 2, 1835; graduated under the tutorship of our lamented Gov. Harvey at Kenosha, Wis.; spent 2 years in Wisconsin pineries; taught school two winters; drove five yoke of oxen across the plains to California in 1849; dug gold in California three years, took out about \$15,000; returned home by the isthmus in 1852; located in Janesville and went into the nursery business "indoor" and out; have made something of a success of horticulture; turned over my nursery and business to my two boys, L. L. and M. S. Kellogg, in 1899, who are just making things hum. I moved to Lake Mills, quit work, set out a quarter of an acre to 70 fruit trees (grafted one older tree to 40 kinds of apples), 30 grape vines, 80 varieties of strawberries, \$200 worth of ginseng, lots of other fruits, took 35 first prizes at Jefferson county fair 1907, and am hale and hearty, with not an ache or a pain.

Read all my letters today without glasses as I am writing this.

GEO. J. KELLOGG.



J. Mills Smith.
(The oldest young member.)

Born at Green Bay, Wis., April 23d, 1901. Photo Feb.,
1909. Son of Irving Smith and grandson of
the late J. M. Smith of Green Bay.



Geo. L. Kellogg, Lake Mills, Wis.

Our youngest old member.

2881

STATISTICS OF FRUIT, SPARTA REGION 1908-9.

The number of acres of strawberries to pick during the season of 1909 will be about 350.

The number of acres of red and black raspberries will be about seventy-five, Blackberries about 90.

The number of acres of grapes set out during the season of 1908, about 10 acres. This acreage due largely to the establishing of the trial vineyard here by the Wis. State Hort. Society.

The number of carloads of berries shipped during the season of 1908 was one hundred and sixteen, of all kinds of berries and fruits. The amount received for fruit shipped through the Association, net to Growers, F. O. B., Sparta was \$72,624.25.

REPORT OF DELEGATE TO MINNESOTA.

C. L. RICHARDSON.

The 42nd annual meeting of the Minnesota State Horticultural Society occurred in Minneapolis Dec. 4-4, 1908. I counted 268 people in their places Wednesday afternoon. The membership was reported as 2812. More women are present than at the Wisconsin meetings. The large attendance is due to the place of meeting, which draws from St. Paul and Minneapolis, but still more to the enthusiasm and pertinacity of the country members, who gather from all parts of the state for the annual Reunion.

The apple display looked natural to a northern Wisconsinite. While the Wealthy is the leading apple, the main topic of discussion, the new seedlings, etc., were this year directed to the Malinda. Its keeping qualities were highly praised. Top-worked upon Duchess, it showed a 1-3 increase in size, its productiveness was far beyond that usually shown, while there was no loss in color or keeping quality. Apples of 8 oz. were produced. Cions were hardier; and grafted trees began to bear

at three years, instead of at nine or ten years of age. Malinda topworked upon Hiberna produced somewhat similar results but the increase in size and productiveness was not as marked as in the former instance. The Gould and Alaska crabs seem to be popular for grafting purposes. The Russian varieties are more in evidence than at Wisconsin.

Eight hundred seventy-eight plates of apples were shown. Owing to the extremely bad season the display was disappointing. The apples upon the single plates were small, a large percentage were wormy, curculio marks and limb bruises were abundant and moth-patches were common. Among the apples entered in peck and bushel lots, it was only occasionally that a perfect specimen could be found. A fine array of top-worked varieties were presented, also a number of Malinda seedlings. One, a seedling of Malinda and Wealthy is as large as the latter, solid and heavy, Wealthy in color, Malinda in keeping quality and shows its mixed parentage in shape. Quality hardly equal to Wealthy, it promises to be of great value.

The Plant Breeders Auxiliary, three years old, is doing good work. Apparently any one can belong who is growing seedlings; 226 members are enrolled, 17 of whom are doing hand-pollination; 112 members reported 10,763 seedlings, 3,000 of these are owned by one South Dakota member; 3,078 seedlings are entered for the \$1,000 prize offered by the society for a seedling apple tree "as hardy and prolific as the Duchess" with fruit "equal to the Wealthy in size, quality and appearance" and "that will keep as well as the Malinda." A list of desirable crosses is being prepared so that members can take up whatever work appeals to their taste or environment. Not content with this Minnesota has started on the hunt for a hardy pear tree.

Mr. Patten of Iowa reported over 9,000 seedlings, and has crossed the black and English walnuts. The Excelsior Experiment Station has 325 pots of strawberries under glass for cross-pollination next year, 1,650 strawberry seedlings, 11,000 apple seedlings, 32,300 seedlings of all kinds besides 36,750 Gould crabs for grafting stock. If there be any reward for intelligent, sustained effort, Minnesota ought to evolve many things of value.

A demonstration was given of the physical and chemical analysis of soils. Special attention was called to the importance

to the soil of its medium-sized particles or silt. The Iowa Delegate spoke of the value of southern-grown seeds, on account of their lateness. Minnesota is opposed to "free seed-distribution" and urges a concerted effort to abolish the practice. The Secretary was instructed to draw up a bill to go before Congress establishing a standard quart box and other fruit packages.

The Minnesota State Bee-Keepers Society held their annual meeting Wednesday and discussed "The Fascination of Amateur Bee-Keeping," "Foul Brood" and kindred entomological topics.

Various phases of Improvement work were considered by the Womans' Auxiliary—a branch of the Horticultural Society consisting of 172 Woman's clubs throughout the state with a membership of nearly 8,000. Last year the Auxiliary distributed some 6,000 apple-trees to school children as an accessory to Arbor Day. They believe that bare school grounds and unsightly alleys only educate a child for the penitentiary, and that the surest way to interest the parents is to enlist the children.

That portion of the program devoted to flowers was held under the auspices of the Minnesota Rose Society. Outdoor Roses, Blubs, Dahlias, Perennials and many other flowers were included. A practical garden dress complete, from laced tan shoes to wide brimed straw hat was worn by one bright energetic little woman as a practical demonstration.

Unique among the papers was an appreciation of John Chapman (Pennsylvania 1787) better known as Johnnie Appleseed the pioneer who spent his life throughout Pennsylvania, Ohio and Indiana planting apple seeds in that then untravelled waste.

The three lantern talks were unusually good. "Minnesota Forests and Gardens," "Possibilities of Cranberry Culture" and "Our Duty Toward the Landscape." There are thousands of bog-holes in Northern Wisconsin ranging from a few square rods to several acres in extent which might be utilized for the intensive culture of cranberries.

The strawberry session was brief, being confined to "Small Fruit Culture in the Pine Regions of Minnesota," a valuable exercise on "Strawberries" by Geo. J. Kellogg and a few "Suggestions" by your Wisconsin delegate.

Wednesday evening occurred the Annual Banquet, similar in general plan to our own. Perhaps 200 people were present. The hall was elegant, the menu excellent and the toasts unduly long.

In consequence of its proximity to the great treeless plain, Minnesota has early been compelled to face the problem of forest preservation and extension. The program presented by the Minnesota State Forestry Association, was terse, interesting and full of facts. While 700 square miles of the Cass Lake Reserve were burned over, intelligent forestry has practically eliminated the danger to life and standing timber. In the areas where logging was done, all tops, limbs and refuse was burned. The cost was but 12c to 25c per thousand feet. The average cost of inspection and protection was \$115.20 per township containing on the average 36 million feet valued at \$80,000. The cost of protection can be reduced to \$100 per year per township—which is remarkably cheap insurance. While the forest area is increasing, the burned area and the amount of loss are rapidly decreasing. The loss in 1907 was but \$31,000.

Four short talks were given by young men from the State School of Forestry, including work at Itasca Park, Among the Sand Hills of Nebraska, In a Montana Lumber Camp and In the National Forests of Montana. The work includes pacing, mapping, chaining, use of compass, surveying, estimating, strip valuation, location of corners, etc., thinning, germination, protection of seeds, seed beds and some botany and entomology. For the arid western areas these trees were recommended: Yellow pine, bull pine, white spruce, Colorado blue spruce, Scotch pine, white fir and arbor vitae. For the general good 15 to 20 per cent of the land area should be covered by forests. It was suggested that the U. S. forestry service take up the problem of supply of good forest seeds.

There would seem to be here a legitimate, and as yet unentered, field for the work of our Society. Your delegate respectfully submits that our Society might serve as an official center about which the interests of forest conservation might gather in Wisconsin.

"More fruit and less wood" was a plea for enlightened methods of tree-culture. Our present modes of fertilizing, spraying and cultivation tend to become mere nitrogen-creating

or freeing processes. Hence the wood and fruit buds produced are soft, crass and unripened. Irregular nutrition leads to irregular crops. We must feed a balanced ration to secure a balanced product. The ration must be balanced in *available* plant food. Many plant foods are so nearly insoluble, or in such chemical form as to be available only after the lapse of 50 or 100 years. We have all studied the gospel of the Insoluble—but it belongs in the Apocrypha. The surest way to know the correct ration is to experiment with two out of the three—nitrogen, phosphoric acid and potash—in varying combinations until a satisfactory result is attained.

One veteran orchardist, after half a century of experience, laid down the rule that while clay is a valuable adjunct to orcharding, any location that will raise wheat will raise apples.

It was proposed to organize a Shippers Protective Association and prosecute all just claims against consignees and carriers to the end. It was also suggested that all growers and dealers in nursery stock be registered, licensed and bonded for an amount sufficient to cover all loss due to their carelessness or false representations.

The outlook for plums in Minnesota is not regarded as promising. The American varieties are all unsatisfactory and the opinion was expressed that ultimate success must be attained, if at all, by crossing with the European and Japanese plums. In answer to a question as to the best varieties the plum expert said "none of the varieties are the best. I can not recommend any of them." The enemies of the plum have only recently become active in Minnesota and their restriction or extirpation is still in the experimental stage.

Pruning was taken up at considerable length, including Pruning the Orchard, Pruning for Fruitfulness by A. D. Brown of Wisconsin and the pruning of small fruits, shrubbery, shade and ornamental trees. As unpruned trees incline toward the northeast the cutting back must occur on that side. Winter apples such as Newell and Northwestern Greening which are shy bearers can be persuaded to yield by girdling the limbs—but not the trunk—perhaps three-fourths of the way around. By pruning June 15–July 15, fruit buds can be developed for the following year. There is danger of canker getting a foothold at the places where girdling occurs.

Pruning of shade and ornamental trees is either to make the tree conform to the available space, to permit access of sun and air, to remove dead and diseased wood, to redress storm injury, to stop the ravages of age and neglect or to prepare and balance the tree for change of location, and its nature and amount must depend on the object desired.

The final session was devoted to spraying and topworking, including a demonstration of the preparation of bordeaux mixture. Ten years experience in its use, Two years spraying at Experimental Station, Arsenate of Soda as an Insecticide, A Ten Years Experiment in Top-working and notes from the long experience of the Wisconsin veteran, A. J. Phillips.

A convenient way to prepare bordeaux is to make stock or saturated solutions of lime and copper sulphate. One gallon of water will dissolve 3 lbs. of copper sulphate or 2 lbs. of lime. Knowing this rule the desired amount can be measured out at any time. Either solution will keep all summer. Never mix the stock solutions in concentrated form; they settle too rapidly. Dilute one or both before mixing. It is best to dilute the copper sulphate solution to its normal strength then add the lime solution about 2-3 diluted, then add more water. In other words pour the partially diluted lime into the fully diluted copper sulphate solution. The resulting solution may be tested by adding a solution of potassium-ferro-cyanide. If a dark reddish-brown precipitate is formed add lime until no change occurs. Then the solution is complete or neutralized. The following strengths were recommended.

	lime lbs.	copper sulphate lbs.	water gals.
Japanese plums	3	3	50
Raspberries and strawberries	5	5	50
Apples	4	4	50
Potatoes	6	6	50

For Potatoes arsenate of lead was recommended, 3 lbs. to 50 gals. water. Pour the copper sulphate solution in the barrel, mix the lead and lime solutions and pour in the barrel. Any good test for iron will detect the sulphate or iron if the sulphate of copper be adulterated with it. Very good results have been obtained where one man owns a spraying outfit and does the spraying for the entire neighborhood. The dust spray has been tried. It has proved to be an unmitigated fail-



First Premium Wolf River Apples, at Wisconsin State Fair, 1908.

ure. Some spray as buds open and a second time when petals fall. Some also spray ten days later.

Paris green is losing favor. Arsenate of Soda is recommended. To one pound white arsenic add four pounds of soda crystals and boil until dissolved in two gallons of water. This is equal to two pounds of Paris Green. One pound of arsenate of lead to 40 gals. water was said to be an efficient poison. When once dried upon the plants arsenate of lead will withstand considerable rain. Its presence was detected last summer six weeks after application. Arsenate of soda is cheaper and can be used half-and-half with arsenate of lead very satisfactorily. The Vermoul nozzle is a favorite, others may be better but they clog oftener. In spraying, a pressure of 60 to 120 pounds is necessary.

San Jose scale, it was claimed, does not exist in Minnesota. It has been imported several times but does not endure the winters.

Plum orchards are being sprayed with good results. Trees 5-10 years old, sprayed 1907 and 1908 with copper sulphate 3 lbs. lime 4 lbs. arsenate of lead 3 lbs. water 50 gals. resulted as follows:

- Unsprayed, 53% fruit marketable.
- Sprayed 2 times, 62% fruit marketable.
- Sprayed 3 times, 77% fruit marketable.

Another Test.

- Unsprayed, 40% fruit marketable.
- Sprayed 2 times, 62% fruit marketable.
- Sprayed 2 and 3 times, 74% fruit marketable.
- Sprayed 3 times, 86% fruit marketable.

Cost of spraying 10c to 15c per tree. Thus it is cheaper than jarring the trees. Hogs, chickens or geese will destroy the windfalls—this is very important. Where sprayed no adult curculios were formed. Bordeaux reduces plum rot and plum pocket.

It was a great meeting, the only trouble was—there was too much of it.

REPORT OF THE MADISON HORTICULTURAL
SOCIETY, 1909.

G. W. REIGLE.

It is a well known fact that the Madison society enjoys the enviable reputation for being the oldest horticultural society in the state; for being located in the most beautiful city of the west, a city noted for its enterprise, its culture, its wealth and its hospitality.

With the idea that such environment would afford a fertile field for horticultural activities, the president and secretary of our society secured in about one hundred minutes, one hundred dollars which were to be awarded in premiums for the best vegetable gardens made during the summer.

Limitations governing the size of the gardens were imposed, thus affording an opportunity for the children of the public schools to enter the contest without being handicapped by their elders. Forty-two cash prizes were offered varying in amount from one dollar up to fifteen dollars.

Early in the season, a campaign of education was decided upon, which should embrace first, the lecture second, the demonstration and third, a round-table conversation of question and answer. The above was supplemented by the distribution of nearly five hundred government bulletins, treating on amateur gardening in general and also bulletins treating on individual fruits and vegetables.

What do you think of our plan? At the time we considered that we had something quite original; we knew it to be logical and said it was perfect. Result. The gardens reported for competition were more difficult to find than the unknown quantities in simultaneous equations.

There were distributed to members one hundred and fifty hardy shrubs, viz., *hydrangea grandiflora*, *spireas von Houteii*, *Berberis thunbergia*, crimson rambler and *rosa rugosa*.

Perhaps the most important action of the society for the year was the purchase of fifty standard books on gardening, floriculture and horticulture. These volumes are new and up to date and will supply literature not usually found in city libraries.

A list of the books may be of interest to the readers of our reports.

Garden Making.
Gardening for Profit.
Gardening for Pleasure.
Gardening for Young and Old.
How to make the Garden Pay.
Market Gardening & Farm Notes.
Principles of Vegetable Gardening.
Plums and Plum Culture.
Home Floriculture.
How to Plan the Home Grounds.
Garden of a Commuter's Wife.
The Country Home.
The Home Acre.
A Woman's Hardy Garden.
Vegetable Gardening.
The Seasons in a Flower Garden.
Four Seasons in the Garden.
Biggle Berry Book.
The Spraying of Plants.
The Principles of Fruit Growing.
Field Book of American Wild Flowers.
Art Out of Doors.
Landscape Gardening.
Mary's Garden and How it Grew.
The Fat of the Land.
Three Acres and Liberty.
The Book of Vegetables.
The Farmers Garden.
Farming by Inches.
My Ten-rod Farm.
Flower Garden.
How to Make School Gardens.
\$2,000 a Year on Fruit and Flowers.
The Practical Garden Book.
Gray's Field, Forest and Garden Botany.

We have about \$300 in our treasury today and about \$150 available funds should we decide to re-open our contests inaugurated last year. "And he said unto them, The harvest is plenteous but the laborers are few; pray ye therefore the Lord of the harvest that he send forth laborers unto his harvest."

REPORT OF COMMITTEE ON AWARDS.

Winter Meeting, Jan. 12-13-14, 1909.

Your committee on awards has examined the fruit on exhibition and make the following awards:

- Best Collection: 1st John Reis; 2nd D. E. Bingham.
 Best 4 Plates, winter: 1st John Reis; 2nd O. J. Burnham.
 Best 3 Plates, winter: 1st John Reis.
 Best New Apple: 1st John Reis; 2nd John Reis.
 Best Seeding Apple: 1st J. W. Roe; 2nd E. S. Hildemann; 3rd J. W. Roe.
 Best Plate Avista: 1st D. E. Bingham.
 Best Plate Baldwin: 2nd Geo. J. Kellogg.
 Best Plate Ben Davis: 1st Geo. J. Kellogg; 2nd John Reis; 3rd D. E. Bingham.
 Best Plate Fameuse: 1st John Reis; 2nd O. J. Burnham; 3rd Geo. J. Kellogg.
 Best Plate Gano: 2nd John Reis.
 Best Plate Gem City: 2nd Mrs. Robt. Ramsey; 3rd A. D. Brown.
 Best Plate Golden Russett: 1st John Reis; 2nd Geo. J. Kellogg.
 Best Plate Hibernial: 1st John Reis.
 Best Plate Longfield: 1st John Reis; 2nd D. E. Bingham; 3rd A. D. Brown.
 Best Plate Malinda: 2nd Mrs. Robt. Ramsey.
 Best Plate Mann: 1st John Reis; 2nd H. C. Melcher.
 Best Plate McIntosh: 1st John Reis; 2nd D. E. Bingham; 3rd E. S. Hildemann.
 Best Plate McMahan: 1st John Reis; 2nd D. E. Bingham; 3rd E. S. Hildemann.
 Best Plate Milwaukee: 1st H. C. Melcher.
 Best Plate Newell: 1st John Reis; 2nd D. E. Bingham.
 Best Plate N. W. Greening: 1st O. J. Burnham; 2nd D. E. Bingham; 3rd Mrs. Robt. Ramsey.
 Best Plate Pewaukee: 1st O. J. Burnham; 2nd Geo. J. Kellogg.
 Best Plate Scott Winter: 1st O. J. Burnham; 2nd A. D. Brown; 3rd John Reis.
 Best Plate Sutton Beauty: 1st D. E. Bingham.
 Best Plate Tolman: 1st D. E. Bingham; 2nd John Reis; 3rd O. J. Burnham.
 Best Plate Utter: 2nd John Reis.
 Best Plate Walbridge: 1st John Reis; 2nd Mrs. Robt. Ramsey.

- Best Plate Wealthy: 1st D. E. Bingham; 2nd John Reis; 3rd E. S. Hildemann.
- Best Plate Windsor: 1st O. J. Burnham; 2nd John Reis; 3rd J. S. Palmer.
- Best Plate Wolf River: 1st John Reis; 2nd D. E. Bingham.
- Best Peck Fameuse: 1st John Reis.
- Best Peck McIntosh: 1st John Reis.
- Best Peck McMahan: 1st John Reis; 2nd D. E. Bingham.
- Best Peck Newell: 1st D. E. Bingham; 2nd A. D. Brown.
- Best Peck N. W. Greening: 1st D. E. Bingham.
- Best Peck Wealthy: 1st D. E. Bingham.
- Best Exhibit Pears: 2nd Geo. J. Kellogg.
- Best Exhibit Grapes: 1st John Reis.

WISCONSIN
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TRANS. 1909

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