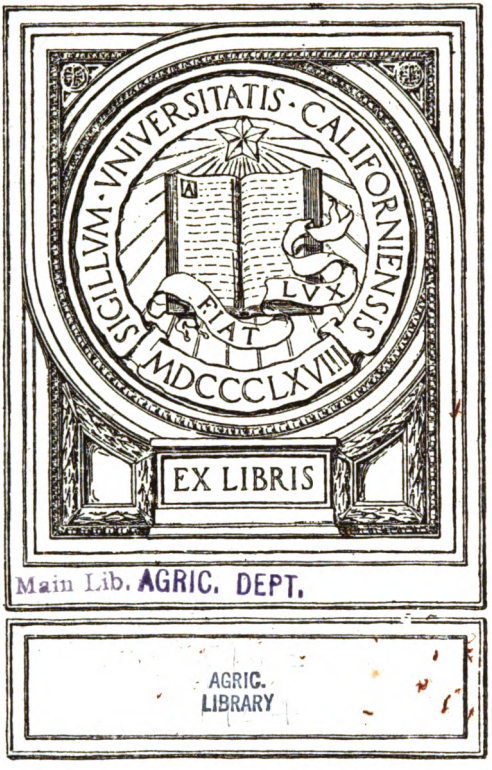
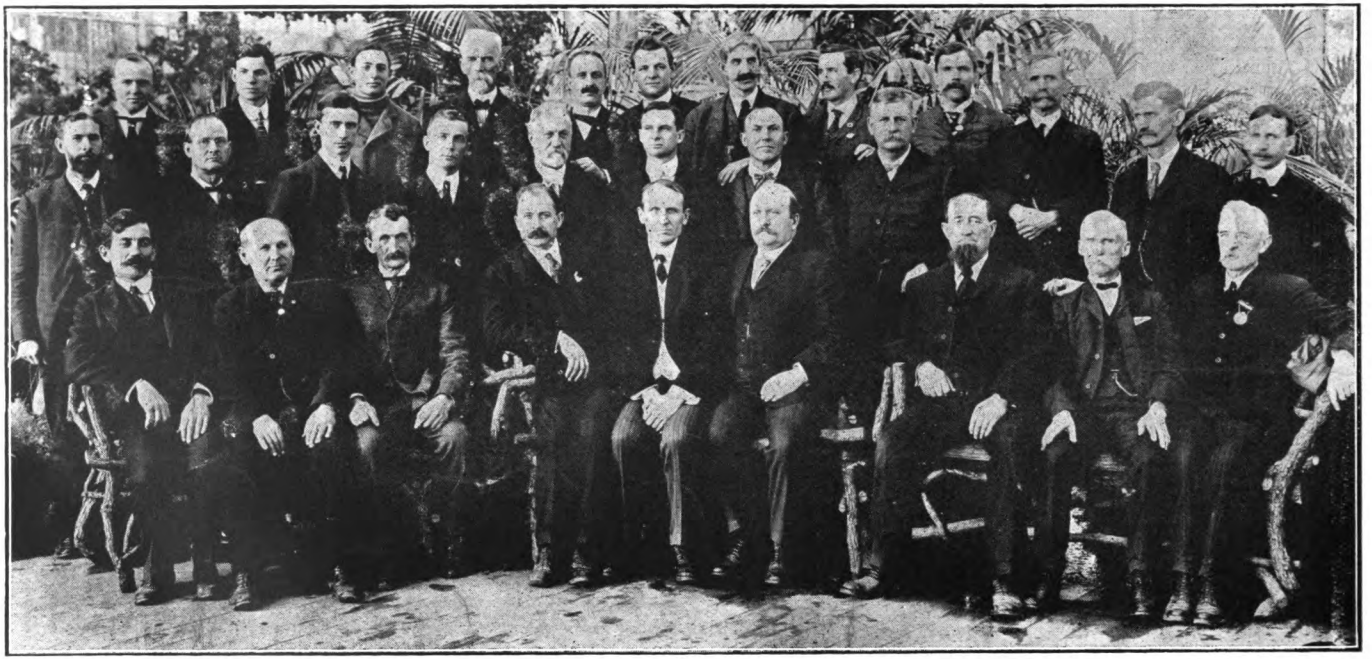
REPORT OF THE PROCEEDINGS

OF THE

INDIANA HORTICULTURAL SOCIETY

FOR THE YEAR 1904





SUPERINTENDENTS OF STATE HORTICULTURAL DISPLAYS AT THE LOUISIANA PURCHASE EXPOSITION, ST. LOUIS, MISSOURI, 1904.

Third row—DAN NEWSHAM, New Orleans, La.; W. J. RYAN, Kendrick, Idaho; M. MANSFIELD, Tuscon, Ariz.; W. B. FLICK, Lawrence, Ind.; CHAS. H. VICK, Rochester, N. Y.; CHAS. V. GALLOWAY, Oregon; M. L. DEAN, Agricultural College, Mich.; W. S. MOORE, Elwell, W. Va.; THOS. REDPATH, Minnesota.

Second row— —— FOSTER, Tennessee; SAM T. DIXON, Houston, Tex.; J. A. McDOWELL, Mexico; J. A. GRAHAM, Roswell, New Mex.; L. A. GOODMAN, Kansas City, Mo.; E. M. POLLARD, Nehawka, Neb.; J. T. LOGAN, Silvan Springs, Ark.; W. F. SCHELL, Wichita, Kan.; S. P. WILSON, Iowa; C. A. McKNABB, Oklahoma City, Okla.; H. A. GREEN, California.

First row—G. H. FARWELL, Washington; A. A. PARSOUR, Wisconsin; GEO. C. COMSTOCK, Norwalk, Conn.; J. B. STINSON, Chief Pomology, Springfield, Mo.; F. W. TAYLOR, Chief Agriculture and Horticulture; S. R. TAFT, Chief Juror Horticulture, Agricultural College, Mich.; G. W. SWINK, Colorado; A. H. SCHAFF, Indian Territory; C. H. ANDERSON, Ivy Depot, Va.

TRANSACTIONS

OF THE

Indiana Horticultural Society

FOR THE YEAR 1904,

BEING A

REPORT OF THE FORTY-FOURTH ANNUAL MEETING, HELD IN ROOMS 11 AND 12, STATE HOUSE, INDIANAPOLIS, IND., DECEMBER 7 AND 8, 1904, TOGETHER WITH REPORT OF THE HORTICULTURAL INSTITUTE, HELD IN KENDALLVILLE, AUGUST 4 AND 5— PROCEEDINGS OF THE STATE BOARD OF HORTICULTURE, LOCAL SOCIETIES, SELECTED PAPERS, ETC.

BY W. B. FLICK, SECRETARY

TO THE GOVERNOR

INDIANAPOLIS:
WM. B. BURFORD, CONTRACTOR FOR STATE PRINTING AND BINDING.
1905.

THE STATE OF INDIANA,
EXECUTIVE DEPARTMENT,
INDIANAPOLIS, February 15, 1905.

Received by the Governor, examined and referred to the Auditor of State for verification of the financial statement.

OFFICE OF AUDITOR OF STATE,
INDIANAPOLIS, February 15, 1905.

The within report, so far as the same relates to moneys drawn from the State Treasury, has been examined and found correct.

D. E. SHERRICK,
Auditor of State.

FEBRUARY 15, 1905.

Returned by the Auditor of State, with the above certificate, and transmitted to Secretary of State for publication, upon the order of the Board of Commissioners of Public Printing and Binding.

UNION B. HUNT,
Secretary to the Governor.

Filed in the office of the Secretary of State of the State of Indiana, February 15, 1905.

DANIEL E. STORMS,
Secretary of State.

Received the within report and delivered to the printer this 15th day of February, 1905.

THOS. J. CARTER,
Clerk Printing Bureau.

LETTER OF TRANSMITTAL.

To His Excellency, Hon. J. Frank Hanly,

Governor of Indiana:

Sir—In accordance with the requirements of law, I have the honor to herewith present you with the forty-fourth annual volume of transactions of the Indiana Horticultural Society, together with such other papers as seem to be appropriate for publication in this connection.

Respectfully,

W. B. FLICK,

Secretary.

OFFICERS OF THE SOCIETY FOR 1904–1905.

President	W. W. Stevens	Salem.
Vice-President	H. H. Swaim	South Bend.
Treasurer	L. B. Custer	Logansport.
Secretary	W. B. Flick.	Lawrence.

Members of Committee on Horticulture.

First District	W. J. Rittershamp	Princeton.
Second District	W. C. Reed	Vincennes.
Third District	Chas. N. Lindley	Salem
Fourth District	John Tilson	Franklin.
Fifth District	James A. Little	Cartersburg.
Sixth District	D E. Hoffman	Winchester.
Seventh District	J. J. Milhous	Valley Mills.
Eighth District	A. W. Shoemaker	Daleville.
Ninth District	J. N. Snodgrass	Kirklin.
Tenth District	H. W. Henry	Laporte.
Eleventh District	Snead Thomas	Marion.
Twelfth District	J. C. Grossman	Wolcottville.
Thirteenth District	C. W. Foote	South Bend.

Executive Committee.

E. Y. Teas, Centerville, 1908. Walter S. Ratliff, Richmond, 1905.
Prof. James Troop, Lafayette, 1906.

Superintendent Experimental Orchard.

Joe A. Burton, Mitchell.

OFFICERS OF THE INDIANA HORTICULTURAL SOCIETY SINCE ITS ORGANIZATION IN 1860.

Date.	President.	First Vice-President.	Secretary.	Treasurer.
1860	*Reuben Ragan	William Miller	Wm. H. Loomis	John C. Teas.
1861-2	*John A. Matson	*William Miller	*Wm. H. Loomis	John C. Teas.
1863	I. D. G. Nelson	Joseph Orr	Geo. M. Beeler	John C. Teas.
1864	I. D. G. Nelson	Joseph Orr	Geo. M. Beeler	John C. Teas.
1865	I. D. G. Nelson	Joseph Orr	Geo. M. Beeler	Calvin Fletcher.
1866	I. D. G. Nelson	*Joseph Orr	*Geo. M. Beeler †Samuel V. Morris	*Calvin Fletcher.
1867	I. D. G. Nelson	Allen Furnas	Seth W. Pearson ‡Joseph Gilbert	J. S. Dunlap.
1868	I. D. G. Nelson	*Allen Furnas	Seth W. Pearson ‡Joseph Gilbert	*J. S. Dunlap.
1869	*I. D. G. Nelson	S. Burnett	T. A. Bland ‡W. H. Ragan	Charles Lowder.
1870	Allen Furnas	J. C. Ratliff	Seth W. Pearson ‡W. H. Ragan	Charles Lowder.
1871	Allen Furnas	J. C. Ratliff	W. H. Ragan	Charles Lowder.
1872	J. C. Ratliff	I. S. Jessup	W. H. Ragan	Charles Lowder.
1873	J. C. Ratliff	I. S. Jessup	J. G. Kingsbury	Charles Lowder.
1874	J. C. Ratliff	*I. S. Jessup	W. H. Ragan	Charles Lowder.
1875	Joseph Gilbert	J. A. Mendenhall	W. H. Ragan	Charles Lowder.
1876	Joseph Gilbert	*J. A. Mendenhall	W. H. Ragan	Charles Lowder.
1877	Sylvester Johnson	J. M. Bulla	W. H. Ragan	Daniel Cox.
1878	Sylvester Johnson	J. M. Bulla	W. H. Ragan	Daniel Cox.
1879	Sylvester Johnson	*J. M. Bulla	W. H. Ragan	Daniel Cox.
1880	Sylvester Johnson	S. Burnett	W. H. Ragan	Daniel Cox.
1881	Sylvester Johnson	*S. Burnett	W. H. Ragan	Daniel Cox.
1882	Sylvester Johnson	J. B. Elliot	W. H. Ragan	Daniel Cox.
1883	Sylvester Johnson	C. M. Hobbs	‖W. H. Ragan †C. M. Hobbs	Daniel Cox.
1884	Sylvester Johnson	E. Y. Teas	C. M. Hobbs	Daniel Cox.
1885	Sylvester Johnson	E. Y. Teas	C. M. Hobbs	Daniel Cox.
1886	Sylvester Johnson	E. Y. Teas	C. M. Hobbs	Daniel Cox.
1887	Sylvester Johnson	E. Y. Teas	C. M. Hobbs	Daniel Cox.
1888	Allen Furnas	W. A. Workman	C. M. Hobbs	Daniel Cox.
1889	*Allen Furnas	J. C. Stevens	C. M. Hobbs	Daniel Cox.
1890	J. C. Ratliff	Joe A. Burton	C. M. Hobbs	*Daniel Cox. †S. Johnson.
1891	E. J. Howland	Joe A. Burton	W. H. Ragan	W. A. Workman.
1892	E. J. Howland	E. Y. Teas	W. H. Ragan	W. A. Workman.
1893	C. M. Hobbs	E. Y. Teas	W. H. Ragan	W. A. Workman.
1894	C. M. Hobbs	E. Y. Teas	W. H. Ragan	F. Beeler, Sr.
1895	C. M. Hobbs	E. Y. Teas	W. H. Ragan	*F. Beeler, Sr.
1896	C. M. Hobbs	E. Y. Teas	Jas. Troop	Isham Sedgwick.
1897	C. M. Hobbs	E. Y. Teas	Jas. Troop	Isham Sedgwick.
1898	C. M. Hobbs	E. Y. Teas	Jas. Troop	Sylv. Johnson.
1899	C. M. Hobbs	E. Y. Teas	Jas. Troop	Sylv. Johnson.
1900	C. M. Hobbs	Mrs. W. W. Stevens	Jas. Troop	Sylv. Johnson.
1901	C. M. Hobbs	Mrs. W. W. Stevens	Jas. Troop	Sylv. Johnson.
1902	W. W. Stevens	E. B. Davis	W. B. Flick	Sylv. Johnson.
1903	W. W. Stevens	H. H. Swaim	W. B. Flick	Sylv. Johnson.
1904	W. W. Stevens	H. H. Swaim	W. B. Flick	Sylv. Johnson.
1905	W. W. Stevens	H. H. Swaim	W. B. Flick	L. B. Custer.

*Deceased. †Appointed to vacancy. ‡Corresponding Secretary. ‖Resigned.

CONSTITUTION AND BY-LAWS

OF THE

INDIANA HORTICULTURAL SOCIETY

CONSTITUTION.

Article 1. This organization shall be known as the Indiana Horticultural Society.

Article II. The objects of the Society are to develop facts and promulgate information pertaining to the science and art or horticulture.

Article III. Its officers shall consist of a President, Vice-President, Secretary, Treasurer, and an Executive Committee of three.

Article IV. There shall be a Horticultural Committee, consisting of one member from each Congressional District, to be elected annually.

Article V. Its members shall consist of annual members, paying a fee of one dollar per annum, into the treasury of the Society (except as provided in by-laws), and honorary members, who shall be elected by the Society for merit as horticulturists of distinction, who may at pleasure participate in the deliberations of the Society. Members' wives will be members without fee.

Article VI. Each member shall be entitled to a copy of the transactions of the Society as often as the same shall be published.

Article VII. The seal of the Society shall consist of an outer rim, embracing the inscription, "Indiana Horticultural Society;" within this, and above the central figure, consisting of a vase of flowers, a pear and apple resting upon a section of vine with its fruit, the words, "Organized 1860;" below, "Incorporated 1875."

BY-LAWS.

I. The President shall preside at all meetings of the Society; he, together with the Secretary, shall have power to call meetings of the Executive Committee; he shall present to the Society in his annual address such suggestions and recommendations as may seem appropriate, and shall appoint all special committees unless otherwise directed by the Society.

II. The Vice-President shall preside in absence of the President.

III. The Secretary shall record all the doings of the Society, collate and prepare all communications, etc., for the public press, and pay over all money received from members, or otherwise, to the Treasurer, on his receipt; shall receive and answer all communications addressed to the Society; establish and maintain correspondence with all local, county, district and State horticultural societies, and secure by exchange their transactions, as far as possible; to aid the President, as an executive officer, in the dispatch of business relating to the meetings of the Society, preparing and publishing circulars and notices of horticultural and similar meetings of general interest, and report to the annual meeting of the Society an abstract of the matter that has come into his possession, which, with its approval, shall become part of the transactions for the current year. He shall also act as librarian of the Society, and shall have the care and custody of its room and its property, under such regulations as may be adopted for the government thereof.

IV. The Treasurer shall receive and hold all funds of the Society, paying out the same only as prescribed by the Constitution. Before entering upon his duties he shall give bond to the Society in the sum of two thousand dollars ($2,000) for the faithful performance of such duties.

V. The officers shall be elected annually, by a ballot vote, and shall serve until their successors are elected and qualified.

VIII. The objects of the Society being to collect, condense and collate information relative to varieties of fruits and other horticultural products and dispense the same among the people of the State, every member shall pay into the treasury one dollar a year for the purpose of publishing and other expenses: Provided, That members of local horticultural societies may become members by paying into the treasury, through their respective local organizations, the sum of fifty cents each. Any person interested in horticulture may become a member by forwarding to the Treasurer or Secretary the fee of membership.

IX. The President, Secretary and Executive Committee may call a meeting of the Society at any time and place they may consider advisable by a notice of thirty days in the public press or by circulars properly distributed.

X. This Society shall hold an annual meeting on the first Wednesday in December of each year and at such place as the Society shall designate at its previous meeting, and semiannual and called meetings may be held as provided for in the preceding section.

XI. The officers of this Society shall constitute a Board of Horticulture, five of whom shall be a quorum for the transaction of business, the officers of the Society to be officers of the Board, said Board to meet immediately on the adjournment of the Society, and afterward on its own adjournment. It shall be the duty of the Board of Horticulture to investigate all accounts or claims against the Society, when presented for payment; to collect horticultural information, for which it may employ an agent, or agents, to visit different portions of this or adjoining States, and may draw on the treasury for money to pay the necessary expenses, when there is money in the treasury not otherwise needed, and said Board shall make full and definite report of its proceedings to the next regular meeting of the Society.

XII. In all exhibitions by this Society the exhibits shall be made in the name of the grower, who must be a member of the Society.

XIII. The Congressional Districts shall constitute the several Horticultural Districts as provided for in Article IV of the Constitution.

XIV. These by-laws may be amended at any regular meeting of the Society by a majority vote.

LIST OF MEMBERS

OF THE

Indiana Horticultural Society

FOR 1904.

LIFE MEMBERS.

Name.	*Postoffice.*	*County.*	*When Became Member.*
Burton, Joe A.	Orleans	Orange	1885
Butler, Prof. A. W.	Indianapolis	Marion	
Conley, John	Richmond	Wayne	1900
Cowing, Granville	Muncie	Delaware	1877
Fletcher, Calvin	Indianapolis	Marion	
Hobbs, C. M.	Bridgeport	Marion	1875
Kane, Morgan	Mitchell	Lawrence	
Morris, Thomas B.	Richmond	Wayne	
Ragan, W. H.	Washington, D. C., Dept. of Agriculture		1860
Ratliff, Joseph C.	Richmond	Wayne	1863
Shanklin, A. Y.	Bringhurst	Carroll	1890
Teas, E. Y.	Centerville	Wayne	Charter Member.
Woods, Arthur Earle	Pecksburg	Putnam	

HONORARY MEMBERS.

Bailey, Dr. L. H.	Ithaca, N. Y.	
Beach, Prof. S. A.	Geneva, N. Y.	
Burrill, Prof. T. J.	Champaign, Ill.	
Craig, Prof. John	Ithaca, N. Y.	
Dunlap, H. M.	Savoy, Ill.	
Dunlap, Mrs. H. M.	Savoy, Ill.	
Farnsworth, W. W.	Waterville, Ohio.	
Garfield, Charles W.	Grand Rapids, Mich.	
Green, Prof. W. J.	Wooster, Ohio	

Name.	Postoffice.	County.	When Became Member.
Hale, J. H.	South Glastonbury, Conn.		
Keach, J. L.	Indianapolis	Marion	1901
Sanders, Edgar	Chicago, Ill.		1900
Stanton, J. W.	Richview, Ill.		
Van Deman, H. E.	Parksley, Va		
Taft, Prof. L. R.	Agr'l College, Mich.		
Willard, S. D.	Geneva, N. Y.		
Lazenby, Prof. W. R.	Columbus, Ohio		

LIST OF ANNUAL MEMBERS, 1904.

Name.	Postoffice.	County.	Became a Member.
Aiken, W. W.	Franklin	Johnson	1901
Aiken, Mrs. W. W.	Franklin	Johnson	1901
Alward, Geo. H.	South Bend	St. Joseph	1904
Anderson, E. D.	Mentone	Kosciusko	
Anderson, Mrs. E. D.	Mentone	Kosciusko	
Anderson, O. C.	Mentone	Kosciusko	
Anderson, Mrs. O. C.	Mentone	Kosciusko	
Andrews, Wm. H.	Wolcottville	Lagrange	
Andrews, Mrs. Wm. H	Wolcottville	Lagrange	
Apple, John W	Oaklandon	Marion	1875
Apple, Mrs. Jno. W.	Oaklandon	Marion	1875
Arbuckle, Alvin.	Clermont	Marion	1905
Arbuckle, Mrs. Alvin	Clermont	Marion	1905
Baldwin, T. A.	Oxford.	Benton	
Baldwin, Mrs. T. A.	Oxford	Benton	
Bartholomew, H. S. K.	Goshen	Elkhart	1903
Bartholomew, Mrs. H. S. K.	Goshen	Elkhart	1903
Bash, C. S.	Fort Wayne	Allen	1903
Bash, Mrs. C. S.	Fort Wayne	Allen	1903
Barr, R. J.	Washington	Daviess	
Barr, Mrs. R. J.	Washington	Daviess	
Beard, Mrs. Jonathan	New Albany	Floyd	1865
Beck, R. L	Liberty	Union	1903
Beck, Mrs. R. L.	Liberty	Union	1903
Berryman, W. L	Tipton	Tipton	1896
Berryman, Mrs. W. L.	Tipton	Tipton	1896
Benoy, Ran	Matthews	Grant	1891
Benoy, Mrs. Ran	Matthews	Grant	1891
Billingsley, J. J. W.	Malott Park.	Marion	

Name.	Postoffice.	County.	Became a Member.
Billingsley, Mrs. J. J. W.	Malott Park	Marion	
Billingsley, Samuel	Greenwood	Marion	1904
Billingsley, Mrs. Samuel	Greenwood	Marion	1904
Biliter, Ben F.	Huntington	Huntington	
Biliter, Mrs. Ben F.	Huntington	Huntington	
Blasdel, Amos	Broad Ripple	Marion	1904
Blasdel, Mrs. Amos	Broad Ripple	Marion	1904
Blue, E. F.	Monticello	White	1903
Bogue, A. H	Lagrange	Lagrange	1903
Bogue, Mrs. A. H.	Lagrange	Lagrange	1903
Bricker, Enos.	Brimfield	Noble	
Bricker, Mrs. Enos	Brimfield	Noble	
Bridges, John M	Dugger	Sullivan	
Bridges, Mrs. Jno. M	Dugger	Sullivan	
Buck, H. F	Elberfeld	Warrick	1904
Buck, Mrs. H. F.	Elberfeld	Warrick	1904
Bullock, L. O.	Lagrange	Lagrange	
Bullock, Mrs. L. O.	Lagrange	Lagrange	
Burris, J. B.	Cloverdale.	Putnam	
Burris, Mrs. J. B.	Cloverdale.	Putnam	
Campbell, Geo. B.	Bloomington	Monroe	
Campbell, Mrs. Geo. P.	Bloomington	Monroe	
Carr, Prof. J. W.	Anderson	Madison	1904
Carr, Mrs. J. W.	Anderson	Madison	1904
Case, Riley C.	Lagrange	Lagrange	
Case, Mrs. Riley C	Lagrange	Lagrange	
Cavanaugh, H.	Wolcottville	Lagrange	1903
Clark, Ed. J.	Shelbyville.	Shelby	1903
Cole, B. F.	Trafalgar	Johnson.	1902
Cole, Mrs. B. F.	Trafalgar	Johnson	1902
Coleman, S. S.	Fort Wayne	Allen	1903
Coleman, Mrs. S. S	Fort Wayne	Allen	1903
Conger, Sid	Shelbyville	Shelby	1902
Cotton, I. N	Indianapolis	Marion	
Custer, L. B	Logansport	Cass	1870
Custer, Mrs. L. B	Logansport	Cass	1870
Darlington, Zeba	Pendleton	Madison	1902
Darlington, Mrs. Zeba	Pendleton	Madison	1902
Davis, Mrs. B. A	Laporte	Laporte	1894
Davis, B. A	Laporte	Laporte	1894

Name.	*Postoffice.*	*County.*	*Became a Member.*
Davis, Evan B	Danville	Hendricks	1901
Davis, Mrs. Evan B	Danville	Hendricks	1901
DeVilbiss, W. T	Fort Wayne	Allen	
DeVilbiss, Mrs. W. T	Fort Wayne	Allen	
Dinsmore, Joe S	Bloomington	Monroe	
Dinsmore, Mrs. Joe S	Bloomington	Monroe	
Doan, John L	Westfield	Hamilton	1904
Dorner, Fred., Jr	Lafayette	Tippecanoe	
Dorner, Mrs. Fred., Jr	Lafayette	Tippecanoe	
Eaton, Mrs. Josiah	Lagrange	Lagrange	1904
Eickhoff, Ed. A	Wanamaker	Marion	1873
Eickhoff, Mrs. Ed. A	Wanamaker	Marion	1873
Eller, Thos	Bloomington	Monroe	
Eller, Mrs. Thos	Bloomington	Monroe	
Eller, Mrs. Thos	Bloomington	Monroe	
Eshelman, A. L	Wolcottville	Lagrange	
Eshelman, Mrs. A. L	Wolcottville	Lagrange	
Eshelman, Henry	Wolcottville	Lagrange	
Eshelman, Mrs. Henry	Wolcottville	Lagrange	
Eshelman, Levi	Wolcottville	Lagrange	
Eshelman, Mrs. Levi	Wolcottville	Lagrange	
Eshelman, L. L	Lagrange	Lagrange	
Eshelman, Mrs. L L	Lagrange	Lagrange	
Ellison, R	Lagrange	Lagrange	
Ellison, Mrs. R	Lagrange	Lagrange	
Evans, James B	Bluffton	Wells	1904
Evans, Mrs. James B	Bluffton	Wells	1904
Febles, George	Kendallville	Noble	
Febles, Mrs. George	Kendallville	Noble	
Fess, Fred	Bloomington	Monroe	
Fess, Mrs. Fred	Bloomington	Monroe	
Fitzpatrick, Mrs. Laura T	Whiteland	Johnson	1904
Flanner, Frank W	Indianapolis	Marion	
Flanner, Mrs. Frank W	Indianapolis	Marion	
Flick, W. B	Lawrence	Marion	1876
Flick, Mrs. W. B	Lawrence	Marion	1876
Foote, Henry G	Albion	Noble	1903
Foote, Mrs. Henry G	Albion	Noble	1903
Foote, C. W	South Bend	St. Joseph	1903
Foote, Mrs. C. W	South Bend	St. Joseph	1903

Name.	*Postoffice.*	*County.*	*Became a Member.*
Frame, J. R	South Bend	St. Joseph	
Frame, Mrs. J. R	South Bend	St. Joseph	
Fry, W. H	Greenwood	Johnson	
Furgeson, L. E	White Pigeon, Mich.		1904
Furgeson, Mrs. L. E	White Pigeon, Mich.		1904
Garmire, Marion	Lagrange	Lagrange	1903
Garmire, Mrs. Marion	Lagrange	Lagrange	1903
Garretson, Amos	Pendleton	Madison	
Garretson, Mrs, Amos	Pendleton	Madison	
Garretson, Chas. A	Pendleton	Madison	
Garretson, Davis	Pendleton	Madison	1894
German Kali Works	St. Louis, Mo		
Gloyd, J. D	Fort Wayne	Allen	1903
Gloyd, Mrs. J. D	Fort Wayne	Allen	1903
Goble, D. H	Greenfield	Hancock	
Goble, Mrs. D. H	Greenfield	Hancock	
Good, M. J	Avilla	Noble	
Good, Mrs. M. J	Avilla	Noble	
Graham, A. A	Liberty	Union	
Graham, Mrs. A. A	Liberty	Union	
Greene, W. T., M. D	Albion	Noble	1904
Greene, Mrs. W. T	Albion	Noble	1904
Grossman, J. C	Wolcottville	Lagrange	1893
Grossman, Miss Mary	Wolcottville	Lagrange	1893
Gustin, E. R	Peru	Miami	1900
Haines, Noah C	Pendleton	Madison	1896
Haines, Mrs. Noah C	Pendleton	Madison	1896
Haines, H. E	Granger	St. Joseph	1904
Haines, Mrs. H. E	Granger	St. Joseph	1904
Hale, Henry J	Indianapolis	Marion	1890
Hale, Mrs. Henry J	Indianapolis	Marion	1890
Halstead, Wm	Rensselaer	Jasper	
Halstead, Mrs. Wm	Rensselaer	Jasper	
Hardy, Thos. M	Pendleton	Madison	1897
Hardy, Mrs. Thos. M	Pendleton	Madison	1897
Harper, Jno. E	Morristown	Shelby	1905
Hazelett, Samuel A	Greencastle	Putnam	1902
Hazelett, Mrs. Samuel A	Greencastle	Putnam	1902
Hartzler, D. J	Topeka	Lagrange	1903
Hartzler, Mrs. D. J	Topeka	Lagrange	1903
Henby, J. K	Greenfield	Hancock	1885

Name.	*Postoffice.*	*County.*	*Became a Member.*
Henby, Mrs. J. K	Greenfield	Hancock	1885
Henderson, R. D	Pleasantville	Sullivan	
Henry, H. W	Laporte	Laporte	1898
Henry, Mrs. H. W	Laporte	Laporte	1898
Hess, Ed	Brook	Newton	1893
Hitchcock, Don K	Brimfield	Noble	
Hitchcock, Mrs. Don K	Brimfield	Noble	
Hitz, J. E	Indianapolis	Marion	1902
Hitz, Mrs. J. E	Indianapolis	Marion	1902
Hobbs, E. M. C	Salem	Washington	
Hobbs, Mrs. E. M. C	Salem	Washington	
Hoff, Geo. W	Shipshewana	Lagrange	1904
Hoff, Mrs. Geo. W	Shipshewana	Lagrange	1904
Hoffman, D. E	Winchester	Randolph	
Hoffman, Mrs. D. E	Winchester	Randolph	
Hoover, John	Spiceland	Henry	
Hoover, Mrs. John	Spiceland	Henry	
Hoover, O. P	Bridgeport	Marion	1903
Hoover, Mrs. O. P	Bridgeport	Marion	1903
Horner, M. E	Lima	Lagrange	1903
Horner, Mrs. M. E	Lima	Lagrange	1903
Howland, Chas. A	Malott Park	Marion	1860
Howland, Elisha J.	Malott Park	Marion	1860
Howland, Mrs. Elisha J.	Malott Park	Marion	1860
Huey, M. G.	South Bend	St. Joseph	
Huey, Mrs. M. G	South Bend	St. Joseph	
Imes, W. A	Brimfield	Noble	1903
Imes, Mrs. W. A	Brimfield	Noble	1903
Jackson, W. C.	Lagrange	Lagrange	
Jackson, Mrs. W. C.	Lagrange	Lagrange	
Jacobs, Chas	Pendleton	Madison	
Jacobs, Mrs. Chas	Pendleton	Madison	
Jarrettson, A. J.	Montpelier	Blackford	1903
Jarrettson, Mrs. A. J	Montpelier	Blackford	1903
Jester, J. N.	Colburn	Tippecanoe	
Jester, Mrs. J. N	Colburn	Tippecanoe	
Jones, Isaac B	Pendleton	Madison	1903
Jones, Mrs. Isaac B	Pendleton	Madison	1903
Johnson, Sylvester	Irvington	Marion	1860
Johnson, Mrs. Sylvester	Irvington	Marion	1901
Johnson, D. B	Mooresville	Morgan	

Name.	*Postoffice.*	*County.*	*Became a Member.*
Johnson, Mrs. D. B.	Mooresville	Morgan	
Johnson, Will	Fort Wayne	Allen	1903
Keasey, Ezra	Lagrange	Lagrange	1904
Keasey, Mrs. Ezra	Lagrange	Lagrange	1904
Kell, Geo. W.	Huntertown	Allen	1902
Kell, Mrs. Geo. W	Huntertown	Allen	1902
Kelsay, W. A.	Fort Wayne	Allen	1903
Kelsay, Mrs. W. A	Fort Wayne	Allen	1903
Kimmell, J. C.	Ligonier	Noble	1897
Kimmell, Mrs. J. C.	Ligonier	Noble	1897
King, Caleb W.	Richmond	Wayne	1900
King, Mrs. Caleb W.	Richmond	Wayne	1900
King, Chris.	Rushville	Rush	1901
King, Mrs. Chris	Rushville	Rush	1901
Kingsbury, J. G	Irvington	Marion	1870
Kingsbury, Mrs. J. G.	Irvington	Marion	1870
Kinsey, W. E	Salem Center	Steuben	1904
Kinsey, Mrs. W. E	Salem Center	Steuben	1904
Knaub, Ben	North Vernon	Jennings	
Knaub, Mrs. Ben	North Vernon	Jennings	
Kring, J. W.	South Bend	St. Joseph	1903
Kring, Mrs. J. W	South Bend	St. Joseph	1903
Lafuse, W. H	Liberty	Union	
Lafuse, Mrs. W. H	Liberty	Union	
Lampman, O. A	Topeka	Lagrange	
Lampman, Mrs. O. A	Topeka	Lagrange	
Latta, Prof. W. C.	Lafayette	Tippecanoe	
Latta, Mrs. W. C	Lafayette	Tippecanoe	
Linnen, W. F	Noblesville	Hamilton	
Linnen, Mrs. W. F	Noblesville	Hamilton	
Leaming, Henry	Romney	Tippecanoe	
Leaming, Mrs. Henry	Romney	Tippecanoe	
Leitzman, W. F	Mooresville	Morgan	1882
Leitzman, Mrs. W. F	Mooresville	Morgan	1882
Libey, C. N.	Lima	Lagrange	1902
Libey, Mrs. C. N	Lima	Lagrange	1902
Lindley, Chas. N	Salem	Washington	
Lindley, Mrs. Chas. N	Salem	Washington	
Listenfelt, Jacob	Pennville	Jay	1903
Listenfelt, Mrs. Jacob	Pennville	Jay	1903

Name.	*Postoffice.*	*County.*	*Became a Member.*
Little, James A	Cartersburg	Hendricks	1863
Little, Mrs. James A	Cartersburg	Hendricks	1863
Lodewick, A. G	Auburn	Dekalb	1904
Lodewick, Mrs. A. G	Auburn	Dekalb	1904
Louth, C	Battle Ground	Tippecanoe	
Low, John W	Topeka	Lagrange	1902
Low, Mrs. John W	Topeka	Lagrange	1902
Lowth, Chas	Lagrange	Lagrange	
Lowth, Mrs. Chas	Lagrange	Lagrange	
Maish, D. F	Frankfort	Clinton	
Maish, Mrs. D. F	Frankfort	Clinton	
Marsh, David C	Edinburg	Johnson	1903
Marsh, Mrs. David C	Edinburg	Johnson	1903
Matthews, George	South Bend	St. Joseph	1903
Matthews, Mrs. George	South Bend	St. Joseph	1903
Mays, C. C	Frankton	Madison	1903
Mays, Mrs. C. C	Frankton	Madison	1903
McCarty, J. H	Huntertown	Allen	
McCarty, Mrs. J. H	Huntertown	Allen	
McClue, Chas	Angola	Steuben	
McClue, Mrs. Chas	Angola	Steuben	
McKain, A. A	Indianapolis	Marion	1904
McKain, Mrs. A. A	Indianapolis	Marion	1904
McIntosh, G. W	Rega	Orange	
McIntosh, Mrs. G. W	Rega	Orange	
Milhous, J. J	Valley Mills	Marion	1890
Milhous, Mrs. J. J	Valley Mills	Marion	1890
Mills, J. W	Lagrange	Lagrange	
Mills, Mrs. J. W	Lagrange	Lagrange	
Moffett, Frank	Carmel	Hamilton	1902
Moffett, Mrs. Frank	Carmel	Hamilton	1902
Moore, Dr. Henry	Irvington	Marion	
Moorhouse, Jno. W	Albion	Noble	1898
Moorhouse, Mrs. Jno. W	Albion	Noble	1898
Moyer, G. N	Laketon	Wabash	1901
Moyer, Mrs. G. N	Laketon	Wabash	1901
Mozingo, Miss Mary M	Marion	Grant	
Mustard, Wm	Broad Ripple	Marion	
Mustard, Mrs. Wm	Broad Ripple	Marion	
Nelson, M. J	Topeka	Lagrange	1903
Nelson, Mrs. M. J	Topeka	Lagrange	1903

Name.	Postoffice.	County.	Became a Member.
Newby, Thos. T	Carthage	Rush	1890
Newby, Mrs. Thos. T	Carthage	Rush	1890
Newman, R. H	Shipshewana	Lagrange	1900
Newman, Mrs. R. H	Shipshewana	Lagrange	1900
Newton, Geo. F.	South Bend	St. Joseph	
Newton, Mrs. Geo. F	South Bend	St. Joseph	
Norris, A. D	Emporia	Madison	1901
Norris, Mrs. A. D	Emporia	Madison	1901
Osborn, Elam	Economy	Wayne	1903
Osborn, Mrs. Elam	Economy	Wayne	1903
Osborn, John	Richmond	Wayne	1904
Osborn, Mrs. John	Richmond	Wayne	1904
Overman, J. C	Knightstown	Henry	1903
Overman, Mrs. J. C.	Knightstown	Henry	1903
Parker, Frank	Wolcottville	Lagrange	
Perry, Alexander	McCutcheonville	Vanderburgh	
Perry, Mrs. Alexander	McCutcheonville	Vanderburgh	
Peterson, Henry C	Albion	Noble	
Peterson, Mrs. Henry C	Albion	Noble	
Pfendler, ——	Acton	Marion	1905
Phelps, W. W	Noblesville	Hamilton	
Phelps, Mrs. W. W	Noblesville	Hamilton	
Ratliff, Walter S	Richmond	Wayne	
Ratliff, Mrs. Walter S	Richmond	Wayne	
Reed, W. C	Vincennes	Knox	1886
Reed, Mrs. W. C	Vincennes	Knox	1886
Reid, Murdock & Co	Chicago, Ill		1903
Ridgeway, Robert	Amboy	Miami	1903
Ridgeway, Mrs. Robert	Amboy	Miami	1903
Ritterskamp, W. J	Princeton	Gibson	1891
Ritterskamp, Mrs. W. J	Princeton	Gibson	1891
Robison, E. A	Greenwood	Johnson	
Robison, Mrs. E. A	Greenwood	Johnson	
Rockhill, D. K	South Bend	St. Joseph	
Rockhill, Mrs. D. K	South Bend	St. Joseph	
Robbins, Cassandria	Indianapolis	Marion	
Rowe, Chas	Valentine	Lagrange	1903
Rowe, Mrs. Chas	Valentine	Lagrange	1903
Roy, Geo. W	Wolcottville	Lagrange	1904
Roy, Mrs. Geo. W	Wolcottville	Lagrange	1904
Royer, E. E	Welcottville	Lagrange	

Name.	Postoffice.	County.	Became a Member.
Royer, Mrs. E. E	Wolcottville	Lagrange	
Royer, C. S	Valentine	Lagrange	
Royer, Mrs. C. S	Valentine	Lagrange	
Ruhl, Benj	Lima	Lagrange	
Ruhl, Mrs. Benj	Lima	Lagrange	
Schaeffer, D. B	Lima	Lagrange	1904
Schaeffer, Mrs. D. B	Lima	Lagrange	1904
Sears, C. W	Lagrange	Lagrange	1904
Sears, Mrs. C. W	Lagrange	Lagrange	1904
Schermerhorn, J. M	Brimfield	Noble	1902
Schermerhorn, Mrs. J. M	Brimfield	Noble	1902
Schofield, C. S	Indianapolis	Marion	1904
Schofield, Mrs C. S	Indianapolis	Marion	1904
Scholl, Jonas	Lyon's Station	Fayette	
Schlotter, J. G	Indianapolis	Marion	1902
Schlotter, Mrs. J. G	Indianapolis	Marion	1902
Secrest, D. L	Laurel	Franklin	1903
Secrest, Mrs. D. L	Laurel	Franklin	1903
Sheridan, James	Fort Wayne	Allen	1904
Sheridan, Mrs. James	Fort Wayne	Allen	1904
Shoemaker, A. W	Daleville	Henry	1892
Shoemaker, Mrs. A. W	Daleville	Henry	1892
Shortridge, Prof. A. C	Irvington	Marion	
Shortridge, Mrs. A. C	Irvington	Marion	
Sidwell, Henry	Knightstown	Henry	
Sidwell, Mrs. Henry	Knightstown	Henry	
Simpson & Son, H. M	Vincennes	Knox	1895
Simpson, Mrs	Vincennes	Knox	1895
Smith, Al. B	Garfield	Montgomery	1904
Smith, Mrs. Al. B	Garfield	Montgomery	1904
Smith, Chas. C	Lima	Lagrange	1904
Smith, Mrs. Chas. C	Lima	Lagrange	1904
Smith, Dr. Isaac A	Warren	Huntington	1895
Smith, Mrs. Isaac A	Warren	Huntington	1895
Smith, O. C	Fort Wayne	Allen	1904
Smith, Mrs. O. C	Fort Wayne	Allen	1904
Smith, Sumner T	Fort Wayne	Allen	1903
Smith, Walter S	Arlington	Rush	1904
Snodgrass, J. N	Kirklin	Clinton	1903
Snodgrass, Mrs. J. N	Kirklin	Clinton	1903
Snyder, J. W	Ossian	Wells	1903
Sorg, Theo	Fort Wayne	Allen	1903

Name.	*Postoffice.*	*County.*	*Became a Member.*
Sorg, Mrs. Theo	Fort Wayne	Allen	1903
Sower, Dan'l L	Rome City	Noble	1903
Sower, Mrs. Dan'l L	Rome City	Noble	1903
Stanley, Perry J	Albion	Noble	
Stanley, Mrs. Perry J	Albion	Noble	
Starkey, W. D	Zionsville	Boone	1902
Starkey, Mrs. W. D	Zionsville	Boone	1902
Stemple, Milton J	Indianapolis	Marion	1902
Stemple, Mrs. Milton J	Indianapolis	Marion	1902
Stewart, Prof. Wm	Burlington, Vt		
Stewart, Mrs. Wm	Burlington, Vt		
Stevens, Warder W	Salem	Washington	
Stevens, Mrs. Warder W	Salem	Washington	
Stineman, Jonas	McGrawsville	Miami	1900
Stineman, Mrs. Jonas	McGrawsville	Miami	1900
Stinger, B. F	Charlottesville	Hancock	
Stinger, Mrs. B. F	Charlottesville	Hancock	
Stough, J. F	Lagrange	Lagrange	1903
Stough, Mrs. J. F	Lagrange	Lagrange	1903
Stout, H. M	Trafalgar	Johnson	
Stout, Mrs. H. M	Trafalgar	Johnson	
Stout, Wilbur C	Monrovia	Morgan	1900
Stout, Mrs. Wilbur C	Monrovia	Morgan	1900
Swaim, Chas. R	Zionsville	Boone	1903
Swaim, Mrs. Chas. R	Zionsville	Boone	1903
Swaim, H. H	South Bend	St. Joseph	1890
Swaim, Mrs. H. H	South Bend	St. Joseph	1890
Swain, Walter A	Pendleton	Madison	
Swain, Mrs. Walter A	Pendleton	Madison	
Swain, C. E	Pendleton	Madison	
Swain, Mrs. C. E	Pendleton	Madison	
Swain, Wm	Pendleton	Madison	
Swain, Mrs. Wm	Pendleton	Madison	
Swank, Lafayette	Topeka	Lagrange	
Swank, Mrs. Lafayette	Topeka	Lagrange	
Swift, Evan B	Franklin	Johnson	
Swift, Mrs. Evan B	Franklin	Johnson	
Talbert, Rev. Wm	Albion	Noble	
Talbert, Mrs. Wm	Albion	Noble	
Thomas, John L	Pendleton	Madison	
Thomas, Mrs. John L	Pendleton	Madison	

Name.	Postoffice.	County.	Became a Member.
Thomas, Snead	Marion	Grant	1885
Thomas, W. D	Connersville	Fayette	
Thomas, Mrs. W. D	Connersville	Fayette	
Thompson, R. L	Topeka	Lagrange	1904
Thompson, Mrs. R. L	Topeka	Lagrange	1904
Thorpe, E. R	Washington	Daviess	
Tilson, John	Franklin	Johnson	
Tilson, Mrs. John	Franklin	Johnson	
Troop, Prof. James	Lafayette	Tippecanoe	1884
Troop, Mrs. James	Lafayette	Tippecanoe	1884
Troth, R. A	Orleans	Orange	1902
Troth, Mrs. R. A	Orleans	Orange	1902
Tufts, Elmer G	Aurora	Dearborn	1899
Van Kirk, Mrs. Myrla	Lagrange	Lagrange	1903
Wells, Merit	Clermont	Marion	1901
Wemple, E. C	Valentine	Lagrange	1903
Wemple, Mrs. E. C	Valentine	Lagrange	1903
Widney, H. M	St. Joe	Dekalb	1904
Widney, Mrs. H. M	St. Joe	Dekalb	1904
White, John T	Connersville	Fayette	
White, Mrs. John T	Connersville	Fayette	
Whiteley, Isaac	Cambridge City	Wayne	1903
Whiteley, Mrs. Isaac	Cambridge City	Wayne	1903
Williams, Sam'l T. S	Knightstown	Henry	1885
Williams, Mrs. Sam'l T. S.	Knightstown	Henry	1885
Williams, W. A	Rome City	Noble	
Williams, Mrs. W. A	Rome City	Noble	
Williams, D. A	Southport	Marion	
Williams, Mrs. D. A	Southport	Marion	
Wilson, Theo	Indianapolis	Marion	
Wilson, Mrs. Theo	Indianapolis	Marion	
Woollen, Wm. Watson	Indianapolis	Marion	1902
Woollen, Mrs. Wm. Watson.	Indianapolis	Marion	1902
Woodworth, J	Lagrange	Lagrange	
Young, W. S	Franklin	Johnson	
Young, Mrs. W. S	Franklin	Johnson	
Zion, James M	Clarks Hill	Tippecanoe	1892
Zion, Mrs. James M	Clarks Hill	Tippecanoe	1892

PROCEEDINGS

OF THE

Forty-Fourth Annual Meeting

OF THE

Indiana Horticultural Society

HELD IN THE STATE HOUSE

DECEMBER 7th and 8th, 1904.

The forty-fourth annual meeting of the Indiana Horticultural Society was called to order at 1:30 p. m., Wednesday, December 7, 1904, with President Warder W. Stevens in the chair, who said:

Ladies and Gentlemen: I am glad to meet and greet so many of you here at the opening session of our annual meeting. As many of you know, our summer meeting was omitted because of the fact that nearly all of the horticulturalists in the State were engaged in the work of collecting and sending fruits to the World's Fair at St. Louis, and on account of this it was thought best to omit our summer meeting. I think we should now make it up by putting in good time here along various lines of useful things that will be of interest to the Indiana Horticultural Society.

We will now take up our regular program. The first will be an invocation by A. W. Shoemaker, of Daleville, Indiana.

A. W. Shoemaker: Our Father and our God, as we assemble here this afternoon we recognize that it is fitting that we should call upon Thee and ask Thee to send forth Thy blessing and Thy benediction upon us in the hours and days that we are assembled here together. Grant that we may realize that we are laboring together with Thee, and that without Thee we can do nothing; that all we have and are, or ever hope to be comes from Thee, the true and the living God. We come into Thy presence this afternoon realizing and recognizing that without Thee we can do nothing, and we call for Thy assistance in all that we may at-

tempt, and grant, dear Heavenly Father, that something may be accomplished in these meetings for the uplifting and betterment of our people. Grant that the means of education which this Society shall use shall be for the promulgation of the true, the beautiful and the good. We ask that Thy blessings may rest upon the exercises of the hour, and upon the persons here assembled, and grant that it may be the means of such an education as shall be of benefit to our people in the State, and that our people may be better able and qualified for the purpose for which they have been called. Give us Thy blessings while we shall live, and when death comes may we be gathered home as Thy children. We ask it in Thy name. Amen.

President Stevens: I wish to name some of the committees which we shall need at this meeting in order that they may take up their work as soon as it is ready. The committee to pass on the fruit and flower exhibit shall consist of E. Y. Teas, W. H. Lafuse and Mrs. H. M. Stout.

The Auditing Committee shall consist of J. C. Radcliff, John Apple and C. N. Lindley.

There may be some other committees, but they will not be appointed here, but will be appointed as they are required.

Is Mr. Swaim, the Vice-President in the room? Mr. Swaim, will you please take the chair?

Chairman Swaim: The next topic upon the program is the President's address by W. W. Stevens.

Mr. W. W. Stevens: Mr. Chairman, Ladies and Gentlemen—The annual meetings of the Indiana Horticultural Society are always occasions of interest to progressive fruit-growers, who strive to keep pace with the world's progress. Each year the wideawake horticulturist picks up new ideas or makes new discoveries along some line of his work that are revelations to every other horticulturist, and the object of these meetings is for us to come together, compare notes and scatter broadcast any information we may have obtained by reading, investigation or experiment.

This is a business meeting and we are glad to note the practical trend of the present-day farmers' and fruit-growers' gatherings. In many places we notice that local pomological and horticultural societies are having their "orchard field days." These meets are held in orchards, where the methods can be demonstrated with the real objects at hand. It seems that such surroundings should inspire a society to seek after those things which will aid its members in their everyday work. This

is a very practical age in which we live, and in our business we must be very practical if we would win the greatest success. I would not discourage wholesome, entertaining meetings among farming classes, for there is as urgent need for the latter as there is for the former. Good social times and entertainments will do more to keep the young man and woman from contracting the "city fever" than any other factor. But when a business meeting is announced, make it a business affair, and the information you will receive will generally be in a more available form than when diluted with many discussions. If men come to a meeting expecting to get other's experience to compare with their own they want it to be practical, i. e., given in a simple form, and it is this that we are coming to see in the trend of these meetings.

Time is valuable, and whoever is reading a paper or delivering an address before a meeting of this kind is monopolizing as much time as the length of his or her paper or address, multiplied by the number of persons present. Then, be brief; be explicit, be practical in your work. Flowers in their place and flowery language and poetry are admirable, but geraniums in cornfields and purely oratorical flights in the midst of purely practical matters are weedy and should be plucked out.

If the year 1904 had been left off the calendar or Indiana fruit-growers with all their trees and fruits could have slept over until 1905, many think it might have been as well. While there may have been satisfactory results with some fruits in a few favored localities, frosts, droughts and unseasonable conditions generally cut the heart out of both pleasure and profit of the 1904 fruit crop. Insect and fungus troubles have increased and the year has been noted for fruit of inferior quality and profits very far from satisfactory. Those whose business it has been to scour the State for fine specimens of fruit to exhibit at the World's Fair at St. Louis can best testify to the truth of the above statements.

I fear that very few of us realize what the vast increase in wealth, prosperity and refinement among our American people mean to the fruit-growing interests of the country. I thing I am safe in saying that where a dollar's worth of fruit was consumed ten years ago ten dollars' worth is wanted now. And unless all signs fail, one hundred dollars' worth will be required to supply the demand ten years hence, and the Indiana fruit-grower should be prepared to supply his share of fruits that may be wanted.

This demand, however, is going to be for finer and better fruit, carefully graded and selected, honestly packed in attractive packages of such size as can best be transported directly as possible from field and orchard to consumer.

Don't imagine for a moment that you will ever see the markets glutted with high-grade fruits. Commercial orcharding offers a most profitable opening to all who embark in the business and are willing to do things well. I believe that a ten-acre farm in any good fruit section of the State, if rightly planted and cultivated in small fruits and orchard, will give better support to a family than a two-thousand salary in the city. While a twenty-five-acre orchard on some of our hill lands is a far better investment than a ten-thousand-dollar life insurance policy. We know of fruit lands in our State that are made to net their cost value each year from the sale of fruits grown thereon, and they are priced at from $100 up per acre.

The soil and climatic conditions of Indiana for fruit growing are equal to the average of the country, while our nearness to large markets gives us a great advantage over many other fruit-growing States. With a network of electric lines covering a large area of our State, the trolley express, rural mail delivery and most important of all, the parcel post that is coming next to handle our lighter and more valuable products quickly and cheaply, the Indiana land owner has bright prospects before him in commercial horticulture.

The best business in sight today for energetic, educated young men and women, if they love the soil and trees and plants that can be grown thereon, is commercial horticulture on Indiana lands adapted to fruit culture.

The State now appropriates the sum of $1,500 to advance the interests of horticulture. This Society has the management and control of this fund. At the end of each year we are required to show where and how this money has been expended. I think the time has come when we should make an effort to get out into some new paths that may lead to a more rapid development of the fruit industry. To this end I would suggest that such sections of our State as are specially adapted to the growing of any kind of fruit be advertised as liberally as our means will allow, thus informing the world what we have, what we can do, as well as the cheapness of available lands.

Apple storage has become one of the most important features of the fruit industry. It enables the fruit-grower to have a good market for his products the year round instead of about seven months in the year. The grower and handler must learn what varieties are suitable for storage and what are not, what conditions must be provided to secure the best and most economical results, and at what time and under what conditions the different varieties must be put upon the market. Our experience at the World's Fair has shown us that apples are exceedingly variable in length of keeping. Some varieties cannot be placed in cold storage

profitably at all. The problem of selecting varieties and storing them properly is, therefore, a complex one and this Society should take the matter in hand and solve it in so far at least as the producer is interested.

The matter of getting the producer and consumer as near together as possible should be looked into carefully and every encouragement possible extended to those who are operating commercial orchards.

I think our funds will justify it, and the importance of our fruit interests demand that we empower our Secretary to give his entire time to this work, the same to be carried on under the instruction and advice of the Executive Committee. We should also ask for a room to be set apart in the State House for our exclusive use for an office where our property may be secure.

In fine, let us at this meeting plan to do something, and not put in all our time telling what we have done in the past or speculating about the future.

Chairman Swaim: I believe it is customary to refer the address of the President to a committee for action.

Mr. Flick: The program says discussion and reference.

Chairman Swaim: Then we will have the discussion before the reference. Has anyone any remarks to offer upon the suggestions of Mr. Stevens? If they have, we should be glad to hear them now.

Mr. Flick: I do not feel like discussing this paper, and I shall not discuss it, but I just want to say that I like the recommendations, which will make this Society a more stable one, and one that will give our Society a permanent headquarters and a place where the horticulturists of our State who are visiting the city may have a place to call and get such information as they feel they need. I think we should have an office which is kept open. I especially like that recommendation. I have found that we are hampered for help for a great many things. There are many things which should be done and which would be very useful for the Society and would make money for the growers of fruit of the State, but they can not be done properly, therefore they are not attempted at all. The office at this time keeps a very accurate crop report, which has been very useful and is called for by different parties in the United States. Now, we ought to have a closer connection with each fruit-grower in the State so that we might be able to refer him to the best places for marketing his fruit. The Secretary has done this to some small extent, which has been a benefit to some fruit growers. We should have a list of the or-

chards in the State and the comparative amount which they produce each year. These and many other things should be done which would be of use to horticulturists and advance the interests of the State.

Mr. Ratliff: The Secretary did not intimate where it would be proper to have this office, and inasmuch as we have a room here in the State House, Room No. 11, which was set apart for our use, I do not see but what that would be the one that would be available for this office if this suggestion should be carried out.

I like the idea advanced by the President of incorporating the fruit-growers and a dissemination of the idea of better fruit interests, and a dissemination of the knowledge to those outside of our own State. I furthermore endorse the idea of having a list of the fruit-growers available so that when the shippers and consumers desire a list for the purpose of patronizing our home growers it can be furnished without much trouble. I have been called upon a number of times not only by men in our own State, but in others, to furnish a list of such fruit-growers as grow fruits that would meet their demands, and when we furnish such a list as this the fruit-growers are profited thereby. The only reason I can see why an objection should be raised in regard to the office would be to find some one that would take charge of it. It would be all right if visitors came in every day, but if there were only callers two or three times a week, or three or four times a month, the man that had it in charge might feel pretty lonesome sometimes, but this will not be the case. We will have plenty of visitors. I think this arrangement will be fine if it can only be carried out, then horticulturists can come and talk over matters of business and make such arrangements as they think necessary, and if the Secretary did not happen to be there someone would be there who would have charge of the books and other things belonging to the Society.

Mr. Teas: My understanding is that this room was built under the direction of the Indiana Horticultural Society in co-operation with the State House Commissioners for the special purpose of using it for the Horticultural Society, and it seems to be that they have as good a right to that room as anyone else has to any other room in the State House. I do not see why that room is not good enough. I may be mistaken about this, but this is my understanding.

I think the President's message informs us that there are probably only a few places in the State where fruit-growers can succeed, or where fruit growing is possible. I do not believe there is a township in the State but what has good fruit land, and a man of good common sense need not go to other States to find land that is good for fruit.

Mr. Zion: It seems to me that this argument is out of line with Mr. Stevens' suggestions. As far back as I can remember this Society has conducted its business according to certain routine lines because of the fact that our means were limited. So far as I can see I think we are losing a good opportunity. We have kept on these old plans for the last ten or fifteen years. I think we should take advantage of the opportunity we have for raising good fruit, and if our people will not do it we must advertise for those out of the State who desire to go into this business. It takes money to show up a good industry, but this will pay. Look at California and Colorado. I can remember back in the history of California when the fruit-growing interests of that State were not much better thought of than ours are here today. They discovered that they had an opportunity to grow fruit. Men came from the East—wealthy men—and built up beautiful homes, and they commenced the work of advertising the State, and they never stopped until the good old State had invested forty thousand dollars a year for horticultural purposes. Mr. DeLong, who holds the same position that Mr. Flick does, received three thousand dollars a year for staying in the office and answering calls of the farmers and growers of fruit. Men coming to the city will, nine times out of ten, go to the horticultural office. At that office they have a splendid collection of the best information that can be got for different sections of the State and various kinds of fruit. California never made a better investment, and neither could she have made a better investment when she paid this man three thousand dollars as a salary. It raised the land from ten to twenty-five dollars an acre up to twenty-five hundred dollars, and it surprises me that the land owners of Indiana permit themselves to let their land go on as they have been doing and do not attempt to avail themselves of this golden opportunity. I think we should have ten thousand dollars a year. This is an insignificant sum when we consider the splendid opportunities which we have to make an investment. I think we should get out of this routine work and try to do some head work. At the World's Fair people from all over the United States were surprised at the apples that were grown in Indiana. They never thought we could do it. There is a feeling over the whole State that we have a great opportunity, and it strikes me that this is the time we want to make use of it. We want a reasonable, respectable appropriation and we will try to make use of it. We do not believe in crimping a good work. When the land owners see that they will get a great benefit from fruit growing they will turn their attention to it. When a man that owns only forty acres of land has an orchard of four or five acres on it, it almost doubles the value of the land, and it makes enjoyment and comfort for the boys and girls and all the family. I think we should get ten thousand dollars from the State.

Mr. Kingsbury: After that admirable speech of Mr. Zion's I think there ought to be a suggestion made like this, and the suggestion ought to be acted upon. That is, that we appoint a committee here to make a report, one to the Senate and one to the House, concerning these matters, and that we make a showing of the Indiana fruit which has been produced in the fruit districts of our State, and at the same time show what might be done all over the State with a certain appropriation, as Mr. Zion has suggested—ten thousand dollars—to carry on the work. This committee should endeavor to get this appropriation. Indiana is naturally a fruit-growing State, and it is helped by the large markets all around it, and if we had this appropriation we would soon get back the ten thousand dollars. I think we should expect this appropriation.

President Stevens: I would just add a word of explanation with regard to an office. I suggested that we secure a room exclusively for this purpose. Room 11 is used for public meetings. The Secretary has spoken to me about this matter several times. There is no way of keeping things secure when we are only here one day in the week. The remainder of the time this room is used for all sorts of meetings, and our property is carried away, and it is impossible for us to keep it unless we have a room of our own, for we cannot even keep it under lock and key. It seems to me that we should have a room that is exclusively our own.

Mr. Kingsbury: It has been suggested here that all kinds of fruit will grow in every county of the State. There are certain localities where certain kinds do better than certain other kinds, and another county where other things will grow to a better advantage, so I think we should find out just where these places are, and grow fruit accordingly. Along this line I think our information should be investigated and published to the world. It seems to me that we should have more money from the State than we have been having. At the last Legislature we had an appropriation of fifteen hundred dollars. We must go before them again. We must advance and get out of our old ruts. We must keep pace with the other States along this line, and if we can show that we are advancing the work there will be no trouble in getting almost any appropriation which we may ask for. We have started an experimental orchard. The Society paid for the farm and the State gave us an appropriation to carry it on. If we will select persons from among the horticulturists of the State to carry on this work in different portions of the State and advance the interests I have no doubt but what the State Legislature, when they see that we are doing the work well, will come to us with an appropriation, a liberal appropriation, but before they will do this we must show

them that we are trying to do something. We should do this before we ask for an increase in the appropriation. It is our place, therefore, to begin taking advanced steps and commencing something more than we have yet done. We should advertise more liberally and extensively than we have in the past to keep abreast with the other States. This is the reason I make these suggestions.

Chairman Swaim: Is there anything else along this line?

Mrs. Robbins: Would you like to have a woman rise and tell you what she thinks? I would just like to tell you what I think. If there were a headquarters in Marion County every woman could see that it would be a benefit to the Society, for when we come to Indianapolis we would like to have some one of whom we could ask questions and get information. I think we should have a place where we could receive counsel. Some one said that it would be a lonesome job for a man to sit there all day without any callers. Well, then, put a woman in there, for she could bring her knitting. (Applause.) She would lose no time, I am sure. I also know this, that the women of Indiana who are interested in horticulture need more information than they have. This would inspire the women, and therefore inspire the men, and you would find in another year if you should start this, as has been suggested, that you would have to move more chairs in instead of moving some out, in order to make things look right. We would have a large meeting, because Indiana is a horticultural State, as all Indianians know. All we need is more enthusiasm.

Chairman Swaim: If there is nothing further I shall refer this matter to the committee, and if there is any further action to be taken it can be taken when the report of the committee is heard. This committee shall consist of J. M. Zion, H. M. Stout and L. B. Custer.

President Stevens, I turn the chair over to you.

Mr. Swaim: If you will allow me just one moment I would like to say a few words. This is our forty-fourth meeting. My recollection does not go back forty-four years, but as far as it does go back the meetings have been called to order by the chairman pounding on the desk with his fist or with his pen knife. I do not think it is exactly right for us to permit our Chairman to endanger his fists in this manner or ruin his knife or the desk by pounding on the desk with it for order, and so I have provided here an instrument which is commonly called a gavel. This gavel is made in the shape of an apple barrel. It is made out of an apple tree, the wood being taken from one of the old pioneer apple trees

of St. Joseph County. I wish to present this to the Society for the use of the Chairman. The tree from which this wood was taken was said to have borne when living twenty different varieties of apples, and so it might have been called a family tree.

President Stevens, I place this in your care, hoping that it may never fall in less worthy hands. (Applause.)

President Stevens: I will say on behalf of the Society that we are pleased to have this gift from one of our members, and we will treasure it up in the archives of this Society for future time. I know that it is an instrument which we have needed for a long time, and I know we are all glad to get it.

Sylvester Johnson: Mr. President, I move you that a vote of thanks be extended to Mr. Swaim for his valuable gift to this Society.

Mr. E. Y. Teas: I second the motion.

(The motion was voted upon and unanimously carried.)

President Stevens: The next number on the program is the Secretary's report.

SECRETARY'S FINANCIAL REPORT FOR THE YEAR ENDING OCTOBER 31, 1904.

RECEIPTS.

1903.	
October 31. Balance on hand	$29 06
November 1. Received from the Auditor of State	1,500 00
Total receipts	$1,529 06

EXPENDITURES.

1903.	
December 3. J. C. Grossman for expenses attending Board meeting	$12 50
December 3. W. C. Reed for expenses attending Board meeting	9 00
December 3. Caleb W. King for expenses attending Board meeting	5 00
December 3. A. W. Shoemaker for expenses attending Board meeting	1 10
December 3. H. W. Henry for expenses attending Board meeting	11 90
December 3. James Troop for expenses attending Board meeting	6 35

December 3. Joe A. Burton for salary Superintendent Experiment Orchard	125 00
December 3. W. B. Flick on salary as Secretary	75 00
December 3. H. H. Swaim for expenses attending Board meeting	11 60
December 3. Warder W. Stevens for expenses attending Board meeting	12 50
December 3. H. W. Collingwood for attending annual meeting	50 00
December 3. E. Y. Teas for attending Board meeting and clerk	8 75
December 3. Sentinel Printing Co., printing, postals and stationery	21 60
December 3. Walter S. Ratliff, expenses attending Board meeting	5 00
December 3. Sylvester Johnson, expenses attending Board meeting and legislative committeeman	20 00
December 3. S. Johnson for premiums paid	56 00
December 3. Ella A. Shera for reporting annual meeting	30 00
December 3. W. B. Flick, to reimburse him for amount overpaid Treasurer	43 50
December 3. Joe A. Burton for expenses Experimental Orchard 1904.	11 70
February 26. Austin Denny, attorney's fees	10 00
August 26. W. B. Flick on salary as Secretary	150 00
September 17. S. Johnson for premiums paid at State Fair	98 50
October 7. Joe A. Burton, Superintendent Experimental Orchard, salary	125 00
October 7. W. B. Flick on salary as Secretary	150 00
October 28. W. B. Flick for office expenses	163 92
October 28. Ella A. Shera for reporting Kendallville Horticultural Institute	50 00
October 28. S. Johnson for expenses as Treasurer	50 00
October 28. Pratt Printing Co., balance printing monograph	40 00
October 28. Ella A. Shera, balance on stenographic work	20 00
Total expenditures	$1,498 92
Balance on hand	30 14
	$1,529 06

Respectfully submitted,

W. B. FLICK, Secretary.

SPECIFIC APPROPRIATION FOR A FENCE AROUND THE EXPERIMENTAL ORCHARD.

RECEIPTS.

Received from the State	$250 00
Total receipts	$250 00

EXPENDITURES.

Paid for material, labor and construction of the fence around the Experimental Orchard	$245 73
Balance unexpended	4 27
	$250 00

Respectfully submitted,

W. B. FLICK, Secretary.

President Stevens: The next on the program is the Treasurer's report.

TREASURER'S REPORT.

RECEIPTS.

1903.		
November 1.	Balance in treasury	$29 06
November 1.	Amount received from State	1,500 00
	Total receipts	$1,529 06

EXPENDITURES.

1903.		
December 3.	Paid on warrants Nos. 66, 67, 69, 70, 71, 72, 73 to 74, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 88. November 1, 1904: 90, 91, 92, 93, 94, 95, 96, 97 and 98	$1,498 92
	Balance in treasury	30 14
		$1,529 06

Respectfully submitted,

SYLVESTER JOHNSON, Treasurer.

SPECIFIC APPROPRIATION FOR THE FENCE AROUND THE EXPERIMENTAL ORCHARD.

RECEIPTS.

Received from the State	$250 00
Total receipts	$250 00

EXPENDITURES.

Material, labor and construction of fence around Experimental Orchard	$245 73
Balance unexpended	4 27
	$250 00

Respectfully submitted,
SYLVESTER JOHNSON, Treasurer.

Sylvester Johnson: It is hardly worth while to go over these items because they agree with the Secretary's exactly. The balance in the Treasurer's hands at the end of the year was $29.06. Immediately after or on November 1st I received $1,500.00 from the State, so that makes the amount in the treasury $1,529.06, and the expenditures are just exactly as the Secretary has given them. I think there is no use repeating it, but I wish the Auditing Committee would look over all the vouchers that are filed with the State Auditor. He requires the Treasurer to file his vouchers. I hope this committee will go over to the Auditor's office, which is right across the way, and examine them and see if they agree with the report.

Mr. Swaim: I move you that the reports be referred to the Auditing Committee.

Mr. Kingsbury: I second the motion.

The motion was voted on and carried.

President Stevens: The next thing in order is the report from the Experimental Orchard.

Prof. James Troop: I notice by the program that I am expected to report, and that Mr. Burton is also down for a report, so I suppose the main part of the report of the work done at this orchard will be given by Mr. Burton. He told me that he expected to be here this morning. You know he is in charge of the orchard and has been carrying on considerable work there on various lines, raising seedling apple trees, top working

and testing varieties, fertilizers, etc. The committee visited the orchard once during the year—last August, I believe. We visited it in a body. We went over it and made some suggestions, and that is about all we have to report. I will say this, that a fence has been put up during the past year by Mr. Burton, which cost $245.73. He tells me that it is a wire fence with concrete posts, with wire netting around the bottom so as to make it as near as possible rabbit proof and ground hog proof, although I have my doubts about its being either, especially ground hog proof. I wish to say that the experimental orchard is in good condition. If you are ever in that section of the State, any of you, I wish you would take the time to go and see it. I know that Mr. Burton would be glad to take you over it at any time, if you would only let him know that you were coming. Many of the different varieties are now beginning to bear, and it will not be very long until we will commence getting some returns from it.

I think this is all I have to say on this subject, Mr. President. I am quite sure Mr. Burton will be here to give a detailed report.

President Stevens: Mr. Troop, I should just like to ask what work you have outlined for Mr. Burton to do?

Prof. Troop: Along the lines I have mentioned—testing varieties, top working varieties, growing seedlings from selected stock, cross fertilizing different varieties and growing seedlings from them. And we also have a series of fertilizer experiments, mainly for the purpose of finding out if possible something—some remedy—for the root rot in that section. A portion of the orchard is devoted to that purpose almost exclusively. This is all I think of now that is being carried out.

President Stevens: Is Mr. Burton present? His report is next in order. If he is not present we will have to pass for the present on to the next, which is "A Fine Apple Orchard," by E. Y. Teas, of Centerville.

Mr. Williams: We have arranged with Mr. Teas that my son is to read my article first and E. Y. Teas will come next.

Mr. Williams, Jr.: Mr. President, Ladies and Gentlemen—Mr. W. B. Flick, our Secretary, asked me to prepare a paper giving my experience and how I succeeded in growing each year such fine crops of fruit while my neighbors for miles around have none worth naming. With but few exceptions I can answer your question by saying that I sprayed my trees.

I have two orchards, which were planted at different times; one of four acres, which was planted in the spring of 1882; the other, one of

sixteen acres, in the spring of 1890, about which my friend, E. Y. Teas, of Centerville, Indiana, has kindly volunteered to tell you. I shall speak of the four-acre orchard only. This orchard is in the southwestern part of Henry County, Indiana, just east of the range of hills that skirt the eastern boundary of Blue River Valley. Just five miles below and on the same side of this ever-flowing river is the far-famed and noted orchard of Thomas T. Newby, of Carthage, Rush County, Indiana. At this time let me say that both Mr. Newby's and my orchards are planted on ground that was once covered by heavy timber, black walnut, poplar and sugar tree. The soil naturally is a rich clay, sandy loam, underlaid with gravel.

I planted my trees in rows two rods apart in the row and cultivated between them for seven years. I raised corn, potatoes and melons between the rows. I cultivated the trees the same as I did my corn, and I believe that I did that successfully, being careful each year to thin out and prune so as to make a nice symmetrical top. They grew very fast. I covered the soil each year thinly with stable manure. They increased in bearing, but some years the fruit was knotty and wormy, so I concluded to buy a spray pump and spray. I did so.

I gave this orchard three good sprayings with Bordeaux mixture. In the fall we picked from 70 Ben Davis trees 490 bushels of marketable apples, and apples being a good price, I realized over $100.00 per acre that year. It was then that I decided to plant the sixteen-acre orchard.

I have had several paying crops since then, and they have always come when I sprayed my trees well. This four-acre orchard has a stream running through it, almost through the center, so I concluded to make a "special spray orchard" test out of it this year. The west side of the orchard we gave four sprayings, the first time before the buds had bloomed, second time just after the blooms had fallen and ten days later we sprayed again and the fourth and last spraying ten or fifteen days later; result, full of fine apples. The east side of the orchard we only sprayed twice, with the exception of a few trees that were sprayed four times. I did this to see what would be the result. From the trees that we sprayed four times we gathered apples that took the first prize at the Indiana State Fair, while the fruit from the trees that only had two sprayings, standing near the ones that had four sprayings, was not marketable. Every tree that was sprayed in May and June was loaded with fine fruit. I have come to the firm conclusion that from many experiments that I have made that if we expect to raise nice fruit we must keep spraying until late in the season, especially so if it is a late and backward spring. You may ask me why. The potato beetle and other

insects that we see do not hatch until the weather gets warm. We all know that if we place poison where these insects can get hold of it they are soon destroyed; just so with the codling moth.

Now, in regard to fungus rust, etc. Spraying with Bordeaux will keep it off. I could give you a number of proofs of this fact. I will mention one or two instances. Every tree that we neglected spraying shed its leaves in September, and trees where one-half only was sprayed, the side that was not sprayed shed its leaves in September, and the other side that was did not shed until late in the fall; conclusive evidence.

I sprayed most of my Kieffer pears; those I sprayed had no rust on the fruit, while those that were not sprayed, rust covered a great many of them.

Now, in conclusion will say, prune, cultivate and feed the trees while young, and spray every inch of them early and keep spraying until the middle of June, as long as you have an orchard, and you will always have plenty of fruit.

Not knowing what my friend Teas will say about our sixteen-acre orchard, I just want to say that it was conducted on the same plan as the one that I have described. We sent 30 bushels of fruit from these orchards to the St. Louis Exposition and we hear they made a creditable showing for Indiana. (Applause.)

Hundreds of people come to my orchard and have carried away many of the finest fruit before we thought of making this exhibit, and many of my finest apples were sold that we might have exhibited here.

President Stevens: We will now hear from Mr. Teas.

A FINE INDIANA ORCHARD.

BY E. Y. TEAS, CENTERVILLE, IND.

It was my privilege on September 6, 1904, to visit by request the apple orchard of Samuel T. S. Williams, situated about two miles southeast of Knightstown, Henry County, Indiana.

This orchard of about nine hundred apple trees, occupying sixteen acres of high, level land, that was covered fifty years ago with a heavy growth of sugar maple and beech timber, has been planted fourteen years. During the first five years the land was cultivated in farm crops, corn, potatoes, etc. For nine years the orchard has been in clover.

Two years ago last June a terrible windstorm passed over this section that blew down one hundred and twenty-two of the trees and blew off every apple on the trees left standing.

I have seen a good many orchards in America and Europe, but never saw an apple orchard that averaged as well as this. The trees are about in their prime, and are generally healthy, thrifty, with the limbs bending with their load of large, fair, perfect fruit. Yellow Transparent, of which there are twenty-four trees, had all been marketed before my visit. Two hundred and fifty dollars' worth of fruit had already been sold and the crop remaining is estimated at 1,200 to 1,500 bushels.

From fifty to two hundred trees each of the following varieties were planted in addition to the Yellow Transparent mentioned above, and are esteemed by Mr. Williams nearly as in the order named, with Yellow Transparent near the head: Northwestern Greening, York Imperial, Indiana Favorite, Wealthy, Salome, Grimes' Golden, Roman Stem, Smith's Cider, Ben Davis, Pewaukee, Rome Beauty, Northern Spy, Winesap and Cranberry Pippin. Comparatively few varieties were planted. Many that were omitted might have been found profitable.

Mr. Williams attributes his success this year mainly to spraying liberally. The orchard was gone over thoroughly three times and a part of it the fourth. A few trees near a line fence could not be reached on one side with the spray and the difference on the sprayed and the unsprayed portions was very marked, the fruit that was not sprayed being small, scabby, ill-shaped and wormy, while the portion of the same tree fully reached by the spray was large, bright and perfect. The entire cost of material and labor in spraying was about $40, the difference between splendid success and almost utter failure.

Mr. Williams had found the Northwestern Greening a failure in former years, not one apple in ten being fit for market, while this year nearly every apple was fine. There are two other features in which the value of spraying is manifest. Grimes' Golden, Wealthy and some others usually drop much of the fruit before picking time, which is a great loss. In this sprayed orchard there was very little dropped fruit—the fruit hanging well and the foliage remaining quite green until the sharp October frosts, while in nearby orchards not sprayed the fruit and leaves had largely fallen weeks earlier. This feature—the retention of foliage and fruit—applies to pears as well as apples, as in this orchard Kieffer pears were fair and free from blemish, and the foliage green and fresh until late fall, while in a Kieffer orchard not far off both fruit and foliage dropped early, the former so rusty and knotty as to be almost worthless.

I think quite likely thorough spraying would prevent the early dropping of the fruit of the Vandevere Pippin and Rhode Island Greening, once so popular here, and restore these old-time favorites to profit again.

The other feature noticed by me was the almost entire absence of twig blight, so destructive in many orchards, and especially liable to attack

Yellow Transparent. In the trees of this variety I could only find one small twig on one tree that was affected.

As I said before, this orchard has been for about nine years in clover. The clover is cut twice each summer and left on the ground as a mulch. Whenever patches of clover fail from any cause these spots are stirred with a harrow in the spring and reseeded, so as to keep up a good growth. The clover crop is thought to benefit the trees, as well as keep up the fertility of the soil.

The estimated yield of this orchard at the time of my visit was 1,200 to 1,500 bushels of apples. The actual crop gathered was about 2,000 bushels of select fruit and 500 bushels of culls and windfalls, which were made into cider. The sales have amounted to a little more than $1,400.

York Imperials from this orchard, shown at the St. Louis World's Fair, were finer specimens of this variety than those from any other State in the Union. There are thousands of acres of land in this part of Indiana as well adapted to apple growing as is the Williams farm.

To Mr. Williams also belongs the credit of rescuing from oblivion the Taylor's Prolific blackberry, the same having originated in his father's garden, and Sam, when a boy, saved the little seedling, thinking it was a peach tree.

President Stevens: Has anyone a question or a thought to add to the subject?

Sylvester Johnson: I have no questions to ask, but I should like to say a few words in regard to the bright boy that has just read the paper. He will make a horticulturist some of these days. I must say that the paper was well read, and I am sure that this boy takes an interest in horticulture, and I wish we had more boys and more young men in our country like him. We should make an effort to get more into our Society. I think that the paper which this young man read, and also the one which Mr. Teas read were very practical and interesting, and I am sure when they are printed and read by others it will be of benefit to the people. I am a firm believer in spraying. As I have said a great many times in St. Louis when people have asked, "Where and how were these apples grown?" I replied "In Indiana by spraying thoroughly." We certainly did have a fine display of apples there, and most all had been sprayed. We did this by spraying. I am a firm believer in it, and have been for years. I think it is absolutely necessary. It took a long while to get people to believe that there was anything in it. They thought it was simply a fad, of which we have so many, but there are now very few fruit-growers but what believe in spraying. I believe in it firmly.

Mr. Lafuse: I would like for this young man to tell me what kind of poison he used in his spraying material.

Master Williams: We used Bordeaux mixture with Paris green. We used four ounces of Paris green to fifty gallons of water.

Prof. Troop: One thing that struck me in the paper of the young man, and it explains to me why he has an interest in fruit-growing, is this: Did you notice that he spoke of the orchard as "my orchard?" This is why he has an interest in growing apples.

Mr. Wheeler: I came in here on purpose to find out if I could not learn a great many things in regard to horticulture. I have found this out, that if we want to raise nice apples we must spray our trees. I was like some of my friends. I had been raising little, scrawny, knotty, worm-eaten apples. I bought a hand spray pump and tried that and met with very poor success with it, but I had a friend that had a big pump that was put on a wagon and he had been meeting with success. I likewise went and bought one of that kind. We have sprayed for five years, and in that five years we have always had apples. Our neighbors have not been spraying and the result is they have not had apples except of the kind I spoke of raising before I got my sprayer. Last year two of my neighbors, who live very close to me, asked to use my spray pump and I told them they might. When I would get through spraying they would come and get my pump and wagon and spray theirs, and the result was that each one of them raised good apples. If all the people in the neighborhood would spray I think we could exterminate these little pests a great deal better than one spraying by himself.

Mr. E. Y. Teas: I can say that when I visited Mr. Williams' orchard he had one hundred bushels of apples picked, and he did not have half a bushel of inferior ones. I never saw such a large per cent. of fine apples in my life as he raised.

Secretary Flick: Mr. Chairman, I had the pleasure of visiting this orchard. I think it was in October. I heard from intercourse with other horticulturists that this was a fine orchard. I was hunting fruit to exhibit at the World's Fair, and I visited the orchard, and I must say that I have scarcely ever seen as large percentage of marketable fruit in any orchard I have visited for years. I have seen more fruit on the trees, but I have not seen as great a proportion of marketable fruit. Ninety-five per cent. were of fine color, smooth and large. I have had some talk with Mr. Williams with regard to his orchard, and I find that his sixteen-acre orchard is on a ridge, which slopes in all directions, north, south, east and

west, and that the trees were planted in about the usual way, but the trees were gotten from one of the best nurseries in the State, and of course they all proved true to name. This orchard received clean cultivation until the bearing age and then it was sowed down to clover, and it is still in clover. He keeps it in clover. Some of you may wonder how he can do that. He told me whenever the clover begins to look thin on the ground he waits till the spring of the year, when the ground is nice and mellow, then he goes over it and sows the seed in the places where it is needed; goes over it twice with a sharp-toothed harrow, and gets a good set of clover.

President Stevens: Does he do that every year, Mr. Flick, or just every other year?

Mr. Williams: Every other year.

Mr. Flick: He does it whenever it begins to show that it is about to play out. He cuts the clover and weeds and other things that may come up, in June and leaves it on the ground as a mulch. He has, as he has told you, a very fine orchard. He believes in spraying. On one side of the tree where the fruit was sprayed it was perfect, and on the other side where it was not sprayed you could not find a perfect specimen. It was scrawny, wormy and all scabby. There was not any of this fruit fit for the market. I think it is not entirely due to the spraying, but due to the care of the orchard, the keeping of the grounds in condition, etc. The clover keeps the ground in a fine condition to support and feed the trees so that they are able to bear a fine crop. Clover will do that. He pastures his orchard with pigs frequently to pick up the fruit that is down. This is another benefit along the same line as spraying, as they eat the wormy fruit up and destroy the codling moth. I would like to say that I should like for every one in the State that has been discouraged in raising fruit to visit this orchard and see what can be done with proper treatment.

Mr. Evans: I am a stranger here, but I came for information. I am here to talk about spraying. I use the sprayer myself. But I have never heard what spraying is done for. What do we spray for?

A Delegate: We spray to kill or destroy the insect enemies and injurious diseases.

Mr. Evans: I spray just after the bloom falls. I do not spray when the trees are in blossom, for it would kill my neighbor's bees, and I don't want to injure my neighbor when not necessary. I should like for some one to tell me what varieties he would set out for a profitable commercial fruit orchard.

President Stevens: Mr. Williams, inasmuch as your orchard is under discussion, you may answer his question.

Mr. Williams: I spray to kill the codling moth, and I spray with Paris green.

President Stevens: When do you spray for codling moth?

Mr. Williams: Immediately after the bloom falls.

President Stevens: And then in ten days after that spray again?

Mr. Williams: Yes; in ten or fifteen days we spray again.

Mr. James Little: We ought to understand one thing. Now, suppose that your trees have been affected for a number of years with the fungi. You can't spray an orchard of that kind next spring and make it produce many fine apples that year. It will take some time to restore the condition. The trees have been starved, and the only way that you can get apples in an orchard of that kind is to commence and spray until you restore the health of the trees and make the foliage all right, and then your spraying will bring good results.

Mr. Thomas: My experience and observation is that we have to spray just as much for fungi as we do for the codling moth and other insects. I will say right here, Mr. Curculio and codling moth are separate and distinct insects altogether. If you want to produce nice apples, like Mr. Williams has on the exhibition table, you must have a healthy foliage on the tree or you can not produce them, because we can not grow these fine apples if they are affected with fungi. The first spraying should be done before the buds open. This is to kill the fungi. We spray them with the Bordeaux mixture alone. It is not necessary to use the Paris green for this spraying. After the petals have fallen spray again. I use four ounces of Paris green to fifty gallons of water, and I spray every ten days or oftener if my orchard needs it. You should spray with some kind of a spray pump that will throw the spray into the trees with force enough to reach every portion of the tree, and you will then get good foliage, and then the good apples will follow.

Mr. Swaim: I would just like to ask Prof. Troop a question. What, in your opinion, is the advantage of spraying for curculio? I use a solution of Paris green about the time the buds are open. Does the curculio feed any at that time?

Prof. Troop: As far as my experience goes the only time that we can do any good is at that season of the year. I like the time the buds are

opening, but you should use the Bordeaux mixture with the Paris green. You will kill more curculios then than if you wait until it commences to lay its eggs.

Mr. Swaim: You would advise the use of Paris green pretty strong at this time, then, would you?

Prof. Troop: Yes, I certainly should, but at this time there is no danger of injuring the foliage. After the curculio begins to lay its eggs it will not eat anything to speak of, and you can not kill very many at that time. It attends strictly to business when it begins to lay its eggs, and does not, seemingly, take any food.

Mr. Swaim: Mr. Williams spoke of spraying immediately after the blossoms fell for the codling moth, and then again in ten days. In case there should come a heavy rain immediately after, would you advise spraying immediately?

Prof. Troop: I most assuredly should. Just as soon as it cleared up.

Mr. Evans: When do the curculios hatch out?

Prof. Troop: Are you speaking of the plum curculio?

Mr. Evans: Yes, sir.

Prof. Troop: We have some after the plums are set, and are as large as peas.

Mr. Evans: Do they lay their eggs on the outside of the plum?

Prof. Troop: Yes, sir; on the outside under the skin.

Mr. Evans: Then your theory is that they are stung when they are young?

Prof. Troop: It does not take very long after the blosoms fall for the plums to become as large as peas.

Mr. Evans: No, I know it doesn't take very long. Do they lay their eggs on the plum?

Prof. Troop: Yes, sir.

Mr. Evans: How long does it take them to hatch?

Prof. Troop: It depends on the weather; but, generally speaking, only a few days.

Mr. Evans: After that they sting the plum?

Prof. Troop: They cut a crescent-shaped hole and lay the egg in that.

Mr. Snodgrass: I want to ask a question of Mr. Troop. I am very much interested in these affairs, and I am asking simply for information. I want to know of Mr. Troop if it is dangerous to spray with Paris green when there are plenty of birds around. You of course realize that birds are valuable—they are a great help in fighting the insects in the orchards—and I want to know if there is any danger of killing the birds by spraying for the cankerworm. The birds are likely to pick up the worms after they have eaten the poison. Are they likely in this way to get enough to kill themselves?

Proof. Troop: The birds have a way of discriminating. They will not eat a poisoned worm if they know it, and they generally know it.

Mr. Chas. R. Swaim: Some one has said that they are afraid they will kill their neighbors' bees. I would like to kill their bees. They are only worth ten or twelve dollars, and if they are let alone they will destroy hundreds of dollars' worth of fruit. They destroy the grapes and the Yellow Transparent apples. They can not get ripe on account of the bees. I have had my neighbors tell me that they wished I would not spray when their bees were coming over there. I always told them that they would have to keep their bees at home if they didn't want them to get killed, for when I got ready to spray I am going to spray, and I think we should all do that way. If you don't want your bees killed, keep them at home. I never heard of any bees being killed by spraying, anyhow. When I think the conditions are suitable to spray, I spray.

I have been in the chicken business for about twenty-five years, and if I wanted to kill my young trees I would put the chickens into the orchard. They will fix the trees if you don't cultivate the ground. They will pack it so that in a little while the trees will die. I have tried this to my sorrow.

Mr. Garretson: I have cankerworms and I used about one-fourth of a pound of Paris green to forty gallons of water, but it didn't seem to be sufficient, so I added one-half pound to fifty gallons of water, which was successful. Of course, when I make it stronger with Paris green I add more lime.

Walter Smith: In regard to the killing of the bees I am sorry to see the bees killed, and if you kill the bees you will not have apples, because they distribute the pollen. They are very important factors in the orchard, and in the strawberry patch and all kinds of fruit.

Prof. Troop: I want to ask Mr. Swaim what objection he has to bees, and why he likes to kill them?

Mr. Swaim: My theory is that you do not kill them when you spray. I never saw a dead bee after I sprayed.

Prof. Troop: That is not the question. What objection do you have to bees in the orchard?

Mr. Swaim: What objection do I have to bees? Why, none at all.

Prof. Troop: Then why do you want to kill them?

Mr. Swaim: I said that if I should kill them it was only a loss of about ten or twelve dollars of bees, and probably a hundred dollars' worth of fruit destroyed.

Prof. Troop: How do you know the bees destroy the fruit?

Mr. Swaim: I have eyes, I can stand there and see. I have seen them doing it.

Mr. Johnson: Bees never do anything like this.

Prof. Troop: Did you ever see a bee sting one of the grapes, or break the skin of the grape?

Mr. Swaim: Yes, sir; they were on them, and broke the skin and sucked the juice.

Prof. Troop: The skin was broken already.

Mr. Swaim: I did not mean to say that the bees broke the skin.

Prof. Troop: No, of course not. You are jumping at conclusions. Wasps will break the coat of the skin of the grape; likewise will the English sparrow, but all the bees do is to gather the juice and make honey out of it. You have never seen a bee cut the skin of a grape in your life, and never will.

Mr. Johnson: For the benefit of this gentleman, and for others present, I wish you would give your experience with bees along this line, Prof. Troop.

Prof. Troop: We are taking a great deal of time along about this, but I will tell you of this little experiment. A few years ago I tried the experiment just for my own satisfaction. I had a fine arbor of grapes, and I took a mosquito netting and stretched it on the fence around the grapes. I was very careful that I got everything out except the bees, before I made this enclosure. I left the bees inside there for three weeks. At the end of the three weeks I opened up the mosquito netting and let the bees out and I couldn't find a single grape that had been cut during

the time the bees were in there. The bees didn't have anything else to eat, and they did not then bother the grapes. There was not a grape injured during the three weeks. Now, I know that people claim that bees destroy their grapes, but you can not find a man that will stand up and say he saw the bees cut the skin of the grape. I think the bees would be mighty poor chumps if they did not come along and gather up the juice after the skin is cut and the juice is running out and going to waste. Wasps will destroy grapes, but bees never.

Mr. Johnson: Are they wasps or yellow jackets?

Prof. Troop: These are the same.

President Stevens: We must confine ourselves more closely to the subject under discussion. I anyone has any further remarks to make on this subject we would be glad to hear from them now.

Mr. Lafuse: I have had experience raising plums as well as raising apples. It seems to me that it is impossible to destroy the curculio by spraying. I have found that air-slacked lime mixed with wood ashes, applied in the morning before the dampness of the dew is off of the trees is more successful than spraying.

In spraying for the codling moth I would say that I spray before the leaves are on the trees with the Bordeaux mixture, and as soon as the apples begin to form I spray again. The best stuff I have ever used is Green's arsenoid, which is made in Cincinnati. It will stay on the foliage three times as long as the solution from Paris green, and I think it is more effective.

This gentlemen spoke about the fruit all being stung by insects. I noticed this year that early in the season the insects were very scarce. I remember that we had a cold, chilly spring, and that the insects were very scarce. Along in the summer when it began to get warmer they began to get very numerous. They came along in June and spoiled the apples after they were seemingly set on the trees. How late would you recommend spraying, Mr. Troop?

Prof. Troop: Until about the 20th of June.

Mr. Henby: I should like to ask Mr. Williams one question, and that is this: My understanding was that the apple crop in our location, and all over the State, was only about fifteen per cent. of the usual apple crop. I should just like to ask Mr. Williams as to the per cent. of apples he got from his trees compared to the prospect of growth early in the spring. Now, we attributed our loss of the apple crop to the cold weather, extreme cold weather, during the blooming season. We thought we had

a hundred per cent. of blooms. It seemed to us that we had the best prospect for a crop we ever had, and we didn't have over fifteen or twenty per cent. of a crop. So it seems to me that we certainly could not have saved our crop by spraying this season.

Mr. Williams: I will say that we had a heavy bloom, and we also had apples, but I think the spraying saved nearly every apple that set on the tree. I think I should attribute this to the spraying.

Mr. Henby: What per cent. did you have compared with the bloom, supposing you had one hundred per cent. of bloom?

Mr. Williams: Well, we had about seventy-five per cent. of bloom.

President Stevens: Did your trees have all the crop you thought they ought to have to have perfectly fine fruit?

Mr. Williams: Yes, sir.

President Stevens: Then I should say that you had one hundred per cent. of fruit, because you had a full crop, and if you had had more you would have very likely thinned the fruit. So I should say that you had one hundred per cent. of bloom, and one hundred per cent. of fruit.

Mr. Williams: Yes, I think that is right.

Mr. Thomas: I should like to emphasize the proposition in regard to spraying for fungi. I have in mind an orchard one-half mile from where I live. It was very full of blossoms, but this fall when it came to gathering the fruit there were very few apples in the orchard except the Ben Davis, and they were pretty badly scabbed from the fungi. I have in mind a spring a few years ago when we had a bloom for a bountiful crop of apples. When the apples began to form the leaves dropped off, and at the last of June the leaves were nearly all off on account of this fungi. As I have said, they were very full of bloom, but the fruit dropped off. When the fungus got on the stem of an apple it would drop off in three days. By September all of the leaves were off the trees and I feel quite confident that it was on account of the work of the fungi.

Mr. Simpson: I would like to make a remark about the fungi. This year I think there was a fair crop of apples in our orchard. Those that were not sprayed when in bloom, just as the fungi was coming on, all fell off. The apple would seem to be firmly set, too. I sent a number of these apples to different places to find the reason why they should fall, and it was reported that it was on account of the apple scab fungi.

In a case like this I think we would be justified in spraying when the apples are in bloom. Sometimes when we spray when the trees are in full bloom we get the best results. We are sometimes asked not to do this on account of the other man's bees.

President Stevens: I suppose we have given all the time we can to the discussion of this topic. We have quite a lengthy program, as you will see by glancing over it. There are some other matters that we should take up here. I am now going to call for the reports from the Horticultural Committee from the various districts. Is the report ready from the First District? If this is not present, is the report ready from the Second District? From the Third District?

Mr. Reed: I have a report made out, but I left it at home. I did not notice this until I got here. I can send it to the Secretary.

President Stevens: All right. Third District.

Mr. Lindley: I have a report made out, but I hardly think it is full enough, so I wish to retain my report at this time and add more to it.

President Stevens: I will ask if there are any of the Committee on Horticulture here? Are there any ready to report at this time?

A. W. Shoemaker, of District No. 8: We can not report much in the way of fruit, as this section is not in the fruit growing district. The land may be adapted to it, but we have not discovered that it is. We are not doing much as far as apple growing commercially is concerned.

REPORT FROM EIGHTH DISTRICT.

Lying, as it does midway between the northern and southern apple belts of Indiana and in one of the best corn growing sections of the State, but scant attention is paid in this district to fruit growing, save by a very few. The apple orchards of the early settlers, which in their day bore abundantly of such old-time favorites as Vandever Pippin, Rambo, Belleflower, Smith's Cider, etc., have mostly disappeared or the site is marked by a few straggling trees which seldom bear and are unprofitable and unsightly. New orchards have been put out on many farms, 'tis true, to supply the home, but very seldom is there a man with sufficient courage to attempt a commercial orchard, and they of small dimensions. There is apparently a very general lack of knowledge among farmers of the way to establish and maintain an orchard.

Some, in fact the majority, who attempt to set out fruit trees are induced to do so by the fruit tree agent. In the interest that he creates

and attention called to planting trees the agent may in some sense be a benefactor, but in general he is a much greater curse than a benefactor. He comes to the unsuspecting farmer and with oily tongue expostulates upon the superior merits of his whole root or piece-grafted trees, and with highly colored pictures of new, hardy and wonderfully prolific varieties, excites his wonder and interest. His mouth fairly waters at the recital and prospect of raising such fruit, and while under the influence of the spell the farmer orders a bill of trees from the smooth rascal, which is filled with the cheapest trees he can buy from some convenient nurseryman, the trees being labeled to suit the order. The price is usually ridiculously high, often being three to four times the ordinary prices of honest and reliable nurserymen. The agent lures his victim into this deal by deferring a small payment for a year, by throwing in several plants or trees, or contracting to replace all that die, etc.

You know the consequences if the farmer should care for these trees during the tedious years from planting to bearing when he finds to his disappointment and disgust that many of his trees are worthless. He thinks the time and chances of reaping rewards from his labor too remote to begin again and plant an orchard of reliable trees. This experiment has been too costly.

Besides the extravagant price paid for trees, he has no reward for his labor and no profit from the land for many years, and he turns from fruit culture in disgust to raising hogs and corn and occasionally buys a peck of apples from the neighboring store to treat the children. This may be an extreme case, for most farms produce a few apples of poor quality on account of the unchecked ravages of insect pests, but a very small portion produce all that could or should be used in the home.

What few bearing orchards there are are uncultivated and unsprayed and generations of codling moth and cankerworms increase their foul breed without let or hindrance. In the township in which I live I know of no one save the writer who practices spraying. There may be a few in the county, but am reasonably certain that they might be counted on the fingers of one hand. Many apple orchards are so infected with cankerworms that in early June the leaves have the appearance of being burned with fire and the apple that escapes the codling moth is seldom seen.

The amount of pears, plums and small fruits produced in the aggregate in this district, however, appears to be increasing, judging from the frequent glutting of markets in the seasons of these fruits.

There are no commercial orchards of any size in the district; a very few, perhaps, of 10 or 12 acres in extent.

In our county three local societies are maintained. These societies, however, are more occupied with general farm topics than horticulture.

However, the sections where these meetings are held are more advanced in horticulture than any other. More and better orchards are found there. As to causes of the poor conditions of orchards in the district, I would name:

First. Lack of knowledge how to plant and care for an orchard.

Second. Lack of time by the general farmer to plant, spray, etc., at the time when this must be done.

Third. Lack of knowledge of what varieties to plant and where to get the trees of reliable men, many who have had experience with tree agents thinking the whole tree business a swindle.

There is need of education along all of these lines through the press and local societies, wherever such can be organized and maintained.

Mr. Thomas: I have a small report from our district. Our district is agricultural in the fullest sense of the term. The farmers are engaged in diversified farming, specializing mostly on corn and hogs, some on cattle, and a few on sheep. There are very few that pay much attention to the cultivation of fruits of any kind. It has been my good fortune to travel over a great portion of Grant, Miami and Wabash counties in a buggy the past summer and fall, and my observations lead me to believe that there are but few farmers who give much care or attention to their orchards, or the cultivation of fruit of any kind. The apple crop for the last few years in our part of the State has been so uncertain that the farmers have become discouraged and are not planting trees to take the place of those that are dying, neither giving the care to the trees they have that their wants require, corn and hogs being their money crop, while their orchards are left to the care of nature.

The time has been when there was an abundance of humus in the soil to retain moisture, and plant food for the building up of a healthy, vigorous tree and foliage capable of resisting the attacks of insect pests and the diseases to which so many trees succumb in their weakened condition when left to the care of nature. When a tree is planted it is there to stay the remainder of its life. If the food it requires is not sufficient for its wants it makes a poor, weakly growth and is not in condition to bear good crops of nice, luscious fruit. An apple tree is a factory for the manufacture of apples. Every root, fiber and leaf are the workmen that operate the factory, and all they require is plenty of raw material placed within their reach and a little protection from the ravages of insect pest and fungi, and they will turn out the finished product.

That apples can be made profitable in our part of the State, I think there can be no doubt, if the farmer will give the care and attention to his orchard that he gives to some of his other products. What man has

done man can do again. Notwithstanding the apple crop this season in our immediate locality was almost a failure, Mr. Jacob Fishel informed me that he has sold over one hundred dollars' worth of apples from his orchard of an acre and one-half twelve years from planting, which certainly is better than corn and hogs.

I have wandered from my subject of a report of horticultural interests in our district. We have two societies, one in Huntington County and one in Grant. There is not as much interest taken in our society as there was a few years ago, some of our most active members having identified themselves with the Patrons of Husbandry, which meets twice a month on Saturday, and they feel that another Saturday to the society is taking too much of their time.

Farmers, I think, are planting more ornamental shrubs and plants and otherwise beautifying their home surroundings.

There has been some work done along the line of beautifying country school grounds, principally by the school children planting our native trees, and I do not think that there was one out of ten planted that lived through the first summer. I think the planting of school grounds should be done under the supervision of the township trustee, or some party competent to direct such work.

Secretary Flick: I have a few announcements which I should like to make at this time. There is to be an informal reception and social held here tonight in this room, to which all are invited. You are at liberty to invite your friends. There will be some light refreshments served. I think possibly it would be well to have a Committee on Introduction, so I will appoint John W. Apple, J. C. Grossman, Prof. Troop and Mrs. W. B. Flick.

I wish also to say that the Secretary is now ready to receive your names and your fees for the coming year. Under the Constitution of our Society the membership expires on the 31st day of October of each year, so of course you are now delinquent. I shall be glad to enroll anyone. I think you understand the terms.

We might state that those who have reports, or will have reports by tomorrow, will find a place for them on the program and can offer them at that time. If we have the time I suppose we will have them read. If not, I suppose they will be placed in the hands of the Secretary for publication.

President Stevens: As this finishes our program for today, we will now stand adjourned until 7:30 this evening.

EVENING SESSION.

President Stevens: Ladies and gentlemen, we will have to change our program this evening on account of the absence of Col. John P. Logan, of Arkansas, who was to have been with us this evening and speak on "'Profits and Pleasures of Fruit-Growing." Of course, we do not know what has detained Colonel Logan. He promised to be here, and was anxious to meet this Society at this time. Possibly the lateness of the trains has made it impossible for him to reach us for this evening's program. Possibly he will be here later, but we can't wait longer.

We have with us tonight Mr. Burton, whose paper was omitted this afternoon, so we will have first Joe A. Burton's report as Superintendent of the Experimental Orchard.

Joe A. Burton: Mr. President, ladies and gentlemen, I tried to be here on time, but our engineer took a notion that we could not run over a freight train which had balked, and we stayed back of it, and this put us in late.

My report is not long enough to occupy the time expected to have been taken by Colonel Logan, but possibly Brother Zion and a few others can express their opinions tonight, and we may occupy the time in the discussion of some of my statements.

REPORT ON EXPERIMENTAL ORCHARD.

JOE A. BURTON, SUPERINTENDENT.

The orchard is now enclosed by a substantial wire fence. The longitudinal wires, ten in number, are No. 9 coiled spring, save bottom one, which is a barb. These have a drawn tension of two rods on each side of the orchard. The stay wires, every three feet, are soft No. 9. The posts are cedar and corner posts encased in Portland cement. Around all is a poultry netting 30 inches high to make the fence rabbit proof. This part, however, is a failure. The groundhogs seem averse to climbing this fence, so they make creep holes wherever they want to pass. I counted thirty-nine creep-holes made since September 1st. This fence cost $245.73, and was paid for by the State.

But few apple seeds were planted last spring, and none came up.

The following pedigreed trees were top worked:

Winesap, pollenized by Grimes; Winesap, pollenized by Rome Beauty; Winesap, pollenized by Ben Davis; Ben Davis, pollenized by

Rome Beauty; Ben Davis, pollenized by Grimes; Benoni, pollenized by Early Harvest; Benoni, pollenized by Chenango; Benoni, pollenized by Trenton Early; Benoni, pollenized by Yellow Transparent; four trees by Grimes inbred.

The following top-worked with scions from Stark Bros., Louisiana, Mo.: One tree with Bay; one tree with E. 5; one tree with Z. 26; one tree, Black Ben Davis.

The following from Albertson & Hobbs, Bridgeport: One tree, with Celestia; one tree with Dickey; one tree with Whitney Russet.

In experiments we get some results. One tree top-worked with Ben Davis from bearing tree and nursery stock propagated from nursery stock for many years, has borne. No difference in the bearing. This, however, is not a fair test. Tree bore prematurely on account of girdling by label wires.

The following to determine whether the stock has any influence on the nature of the fruit we regard as conclusive, and will not follow it further. It is a repetition of the test as given in 1902. Yellow Transparent was grafted on Wild Crab and the apples grown with all Transparent leaves removed. The apples were nourished with food prepared by crab leaves alone. Two very fine Transparents were grown, and when ripe one was tested by Prof. Troop and Mrs. W. W. Stevens, of the committee in charge of the orchard, assisted by Mr. Emery Albertson. They pronounced it a true Yellow Transparent. The other was sent to Prof. Taft at the World's Fair and by him and other experts there pronounced a true Yellow Transparent. Prof. Taft ventured the statement that "to raise a baby on goat's milk would not make it part goat."

Another was to test the variation of varieties. Prof. Bailey tells us that every bud is a new creation. That everything is different. That a so-called sport is no mystery; just a bud varying a little more than the others. It is quite probable he had better withdraw this statement for the present. The dawn of stern facts indicate that a variety can change only by a new creation through the seed or a sport. Once a Ben Davis always a Ben Davis. The observed variations in varieties is probably due to environment, and when the environments become the same, the variations will not show. We grafted scions from a Ben Davis bearing extremely red apples into one bearing light-colored apples. No difference in color could be observed.

FINANCIAL STATEMENT.

Old rails sold	$41 00
Wheat sold	41 20
	$85 20

Paid for safe	$25 00	
12 apple trees from Virginia	3 10	
1 bushel clover seed	6 00	
		34 10
Balance in treasury		$51 10

President Stevens: Has anyone a question to ask Mr. Burton in relation to the Experimental Orchard?

A Member: I should like to ask Mr. Burton when he gets trees from cross-breeding, which tree they most resemble. Suppose it is the Ben Davis and the Grimes Golden. Which one will they most resemble?

Mr. Burton: We have not reached such results yet. The first time we tried this we only knew the parent on the mother's side. We tried four sweet apples this season, but even then we only knew the parent on the mother's side. One of these trees had some apples, but they dropped, as they were not sprayed. Some of the apples reached maturity, and this tree was from the Ben Davis side, but if you would stand a few steps away it would look like a Grimes Golden. We felt sure it must be a cross between the two. I watched impatiently to see about this, and one day I was passing and saw an apple on the ground and hurried to get it and taste it, and it was a sweet apple. Of course, my faith fell, because we didn't feel that a sweet apple was of much importance. I do not know what variety it was. We have only two pedigreed trees. This is the Jenett and the Ben Davis. The father side is the Ben Davis. They have not come into bearing as yet. We expect them to bear considerable next season. The cultivation of these trees was neglected this year in order to force them into bearing. Perhaps this was a bad move, and we should have grown them another year and had them larger. You know we get so anxious along this line that we can not wait.

Mr. Zion: Why not adopt the method of spraying down there? Even in the Experimental Orchard?

Mr. Burton: We have no missionaries down there.

Mr. Little: How do you manage to fertilize the Ben Davis with the Jenett when they are so far different in time of blooming?

Mr. Burton: By a little care you can find a blossom of one overlapping the blossom time of the other. In this case the pollen was saved

from the Ben Davis and kept in glass cans for a week. We had the pollen stored away for a whole week before the Jenett came into bloom. Some seasons they bloom so close together that there is no difficulty at all. You can save the pollen. I kept some from a wild crab for nearly two weeks.

Mr. Ratliff: Wouldn't you think it would be better to graft some of the tender varieties of apples on the crab stock, such as Yellow Transparent and Grimes Golden, rather than on the Ben Davis stock?

Mr. Burton: I do not think the wild crab is nearly as hardy as the Ben Davis. I would rather have the Ben Davis. I think the other is more subject to disease.

Mr. Ratliff: I mean any of the crab apples.

Mr. Burton: I do not think any of the crab apples will grow as fast as the larger apples. The tree will not grow as fast.

President Stevens: Does anyone else have a question?

Mr. Little: I visited an orchard not long ago, in the northern part of the State, and the owner told me that every tree in the orchard was raised from Rambo seeds. I went over the orchard and every single tree in that orchard had a Rambo tendency, or favored in some way the Rambo. Some of the best sweet apples I ever tasted were in that orchard, and the tree was very large and resembled a Rambo.

Walter Smith: May I ask in grafting Grimes Golden in the other stock, is there any advantage in grafting on the body a distance from the ground?

Mr. Burton: We are growing them that way in the Burton Fruit Company's orchard. We are putting out an orchard on what was formerly my own place. We have a thousand trees of Grimes Golden, all top worked on Northwestern Greenings. There are a number of hardy stocks. We do not have very much trouble with the Grimes like they do in the North. There may not be much benefit in the top worked tree, but you possibly then escape the bark diseases. I think it is quite well worth the trouble of taking the chance.

Walter Smith: Is there any way of dealing with the disease?

Mr. Burton: I never have heard of any. The first thing you notice is a deadening of the bark next the surface of the ground and before you know it the tree is dead. I would like for these people to look over their statements in regard to the variation of varieties: There are three

or four kinds of Ben Davis, according to them. I would like to hear something from them here. Our experiments are not conclusive along the line, but from them there seems to be no such thing as a variation of varieties. We might say a great deal about it, but we will test it more.

Walter Smith: What do you mean by the Black Ben Davis?

Mr. Burton: It is a separate apple.

Mr. Smith: Do you mean it is not a Ben Davis at all?

Mr. Burton: Not one of the ordinary variety.

Mr. Smith: What about the New York Pippin?

Mr. Burton: That name is local and is due to environment, I think.

Mr. Smith: Isn't it a Ben Davis?

Mr. Burton: Yes, sir; but they will outsell the Ben Davis.

Mr. Smith: Isn't it a larger apple than the Ben Davis?

Mr. Burton: It is simply a Ben Davis, but for those who will not buy a Ben Davis it is a New York Pippin.

President Stevens: Did I understand you to mean that there is no difference in the texture of the apple, or the quality of any variety grown on different soils under different conditions?

Mr. Burton: No, sir; I will say that there is not a particle of difference. Ben Davis grown on one soil might seem to be a different apple from Ben Davis grown on a different soil. That is all.

There is no change of variety, it is simply due to environment. I have hardly made a fair investigation along these lines, but this is the way I think now. The difference in the Ben Davis, here and there, is due to the immediate surroundings. The stock does not in the least change the nature of the Yellow Transparent, and I shouldn't think it would change the quality of the Ben Davis. We have a number of varieties being tested along on this line. One of these trees was brought into bearing quicker because the wire on the label had cut into it.

President Stevens: Are there any other questions?

Mr. Lafuse: If it will not be influenced by the stock on which it is grafted, I want to know whether it would not be probable that that would be the way to improve our fruit, to select scions from trees that we know bore superior fruit? Some years ago we

had a half dozen Rambos in our orchard, and one of the trees, in particular, bore fruit almost double the size of the other, and they were soft and juicy, while the others seemed to be hard, and not so palatable.

Mr. Smith: I have a case in point also. A man in Hancock County grafted a quince into a pear, and a pear into a quince, and a quince into a pear again for six consecutive graftings, and the twig bore quinces to all intents and purposes, so far as shape was concerned, but the fruit was perfectly dry, with no resemblance whatever to either the quince or the pear.

President Stevens: That is contrary to your experiments, isn't it, Mr. Burton?

Mr. Burton: My idea is that the root or stock is the same to the fruit as the wagon that delivers the wheat to the mill is to the flour. If the wagon brings wheat of a good quality to the mill, the mill will make good flour. If it brings an inferior quality there will be inferior flour, and not much of it. The stock does nothing but nourish the fruit. Of course, it must do that. If the root furnishes more food, of course the apples will be larger. An apple will not grow without food. If a tree will not supply it, it will die. In regard to a tree being grafted, and grafted and grafted, it can not get much nourishment there.

Mr. Little: We have always been taught by experience that fruits are very closely allied, but the idea of pears growing on hickory or walnut trees is a new one to me. I can not believe it. Several years ago a neighbor told me he saw a black haw growing on an apple. I said that he must be mistaken, for I knew it could hardly be true. He knew it must be true, for he knew the man that grafted it, and all about it. I did not believe it, although the man was a very truthful man. We agreed to go and see it, and we did go, for I didn't have faith in his word. I went to see the black haw that was growing on an apple tree. There happened to be a scrubby, seedling pear growing there, and it was a pear instead of a black haw, and it was not an apple at all. I knew it could not be possible, and I think if you will sift this matter down it will be just the same way.

Mr. Teas: In Mr. Burton's case the Grimes Golden produced a sweet fruit, and in that particular case I believe the root had as much to do with the fruit as any other part of the tree.

President Stevens: It seems that your experiments, Mr. Burton, are not yet complete.

Mr. Burton: No, but facts point our way. I think they are complete as far as the influence of the root is concerned. As I said before, the wagon brings bad wheat to the market and the miller makes bad flour, but that is no fault of the wagon's. We have not given this question close enough study. I do not believe the Creator made things in this way.

Mr. Ratliff: I would like to know, Mr. Burton, if grafting any variety on a seedling stock would be just as well as grafting on a more hardy variety whose ripening season corresponds with that of the scion? Wouldn't it be better to graft into the larger, stronger varieties with this point in view? It has been advocated by some that varieties that mature near the same time should be grafted together. Summer varieties should be grafted to stocks that mature during the summer, and autumn varieties to those that mature in the autumn, etc. I should like to know if you have conducted any experiments along this direction, and, if so, what has been the result.

Mr. Burton: Now, we grafted Yellow Transparent on Wild Crab in the proper season, and they have developed very fine Yellow Transparents. Prof. Troop will bear evidence to this. If Mr. Ratcliff's questions were to be answered in the affirmative we would have to do things quite differently from what we do now. If this were true we would have queer orchards.

Mr. Lafuse: I think the variation of varieties from seed comes from the pollenization at the time of blooming. When you plant a seed you have influences at work which were never there before.

Mr. Burton: I can not say, but I do think it has an influence. When you cross pollenize apples I can not see that they are larger or smaller. Take a Winesap, for instance. That is an apple that varies the least in appearance of any of them. This must be pollenized by something else, because it is generally conceded that it has no pollen. I have hunted for hours and hours to find some, but I have never succeeded as yet.

President Stevens: That is all the time we can give to this discussion. We will now take up the next subject on the program, which is "Observations and Experiences at the World's Fair," by Mrs. W. W. Stevens.

Secretary Flick: Mrs. Stevens is unable to be here tonight, but she has kindly sent her paper and I have requested Mr. Grossman to read it for her.

Mr. Grossman: Mr. President, Ladies and Gentlemen—I rather hesitated in taking Mrs. Stevens' place here tonight, as it seems to me it is presuming for me to attempt to read her paper, because you all know

from past experiences what enthusiasm she puts into her papers when she delivers them, and I can not give the expression that the writer would give, but if you will bear with me I will do the best I can.

EXPERIENCES AND OBSERVATIONS AT WORLD'S FAIR.

My experiences and observations at World's Fair extended over fourteen weeks, divided into three periods, viz: The opening, part of July and the whole of August, and the closing. To say that this was a pleasant experience does not half way express it, for it was simply a grand, glorious experience from opening to closing. There was no feature of it that was not full of valuable lessons as well as pleasures. There was not a civilized nation on the globe that was not there, and fitly represented. There seemed to be no trade, calling or profession whose followers were not seeking recognition and clamoring for room, and no form of amusement without its votaries by the score. The beautiful grounds with its thousands of flower beds, blooming shrubs, water gardens and statuary was a sight of such magnificence that one should have felt repaid for the trip, if there had been nothing else to see. The "palaces" were each of them an exposition within themselves and contained an exhaustive display of all interests connected in any way with their line of work. The study and comparison of the peoples of the world, their manners and customs was one of the striking features to me. But when one combines all these things it makes such a stupendous whole that one mind can not grasp it all, and the best that can be done is to take it as a precious jewel in a beautiful setting. After one gets home the noise has left their ears, the glamour their eyes, and they have time for sober reflection, then and not until then can they classify their knowledge and find what they have really learned.

I take it that our Program Committee has aimed all these "experiences and observations" to have a trend towards horticulture. It is very unfortunate to prepare a paper just now and for this body, because so many of you have visited the fair and have seen what I have in a general way, and because there is no way that I can give anything definite or in detail as to awards, number of entries made, or in fact any actual information along this line. The Palace of Horticulture was a very pretty building, adequate in every way and exquisitely arranged for the display of fruits. It was very unfortunately located, being quite away from the popular thoroughfares, on Agricultural Hill. Early in the season this was thought to be a serious drawback by our horticulturists, but later it proved not so bad after all. Those who really cared to see and study fruits came anyway, and the rabble or "pikers" would have only been in the way

and a mild nuisance if they had come. On May 1st, "Opening Day," pandemonium reigned supreme. Hammers and saws, orders and counter-orders, the shrieks of engines outside the buildings, with the rumbling of trucks over floors on the inside, the shrill screech of the venders of wares, the hoarse "barkers" beginning the "bark" that never ceased during the entire fair, and the innumerable foreigners who were wildly gesticulating and frantically trying to make themselves understood, all this made the day one long to be remembered. At 10:30 o'clock all was quiet. The order had gone forth from headquarters the day before that at this time all work should be stopped, all goods must be within the exhibition space alloted to exhibitors. The fair was duly opened with imposing ceremonies. On looking around one saw chaos. Everything seemed at first to be without form and void. The visitor asked "Is everything ready?" The exhibitors echoed the question. After a while an official of the Government Building very proudly answered, "Yes, Uncle Sam is ready." Then in a still, small voice a Hoosier piped out, "Yes, Indiana horticulture is fully ripe and ready." And, sure enough, there was Indiana with four other States in first-class shape, in which condition she stayed for seven months. I observed that the casual visitor looked with sympathy, disdain or indifference on our display because we had no array of tall bottles containing large or freak fruits; no glitter of plate-glass mirrors and no cases of "wax fruits." Hundreds of people told us that they had much better fruit at home than was on exhibition, to which we replied that our fruit was the very best that was grown by those who had freely contributed it, and we always asked our criticising friends to send us some of their finest, but they never did it. I observed very closely, indeed, the exhibits of our sister States, and want to say right here that no one had as creditable a display for the money invested as Indiana. Some of the States had fifty to seventy-five thousand dollars to Indiana's five thousand. Most of them had attendants who were experts in exposition affairs, who received good salaries, while our attendants were just plain fruit growers, who gave their time to the work because they loved their business and were anxious to show their loyalty to their State.

Our exhibit was nicely located near the center of the Palace, and our near neighbors were Missouri, Iowa, Nebraska, Arkansas and Wisconsin, and no better, more obliging neighbors ever lived. One of the pleasant features of the show was the hundreds of acquaintances made. During the hot days of midsummer, possibly we looked a little bit shabby, but on the whole no loyal Hoosier could help but be proud of the exhibit.

I have no notes before me at this writing, but from memory will say that of all the apples taken from cold storage the Salome kept longest and looked finest, and the Wagner did poorest. In fact, I don't think that

we had but few plates of the latter that were fit to put before the judges at all, and they lasted but a few days. Our Ben Davis were quite badly scalded in many packages, as were many of the Jenetts. One barrel of very fine Rhode Island Greenings acted rather queer. On unwrapping them they looked first-class, but in a few hours they began to burst and the noise of the explosion could be heard several feet away, and in twenty-four hours there was not an unbursted apple in the entire barrel. A very noticeable feature of the entire exhibit was the great variation of certain varieties of apples. For instance, the Ben Davis of some States looked so different from the same variety in other States that one could hardly believe them to be the same. But every grower acknowledged them to be some better than no apple at all. In fact, I gave one young girl a Grimes, a Winesap and a Ben Davis, and she asked for the second Ben Davis in preference to one of the others. Hundreds of elderly people stopped at our booth and asked to just look once more at a Yellow Bellflower, Rambo or Milam that had grown in Indiana; but, alas, we had but very few of the first two and not one single entry of Milams. It was surprising to know how many visitors were at the fair from our State, and how many were born in the State and now live somewhere else. In either case they were delighted to see our exhibit. The men and women of fifty or more years would almost always ask after the Bellflower and if I believed what they said about their grandfather's trees of this variety, these trees were sixty feet tall, four feet through, bore every year apples of the most delicious quality, beautifully colored and in size anywhere from a quart cup to an ordinary watermelon. Truly it is wonderful what a hold on the memories and affections of people grandpa's Bellflower tree has. Can't some one renew or resuscitate this old favorite before another world's fair?

When at all practical we aimed to give an apple to every Hoosier who called at the booth and it was wonderful the number of people who at one time or another had lived in Indiana. In fact I was "worked" a number of times before I learned that every one who asked for an apple was not an honest Hoosier, but for fear of "entertaining angels unawares" I gave when I could to all who asked and the State has not suffered for it.

When the awards are published Indiana may not take the lion's share, but she will be well up in the line.

President Stevens: In connection with this paper we have some others. The first one will be by Joe M. Burton.

OBSERVATIONS AND EXPERIENCES AT THE WORLD'S FAIR.

What attracted my attention most was what was not there. I expected to find hundreds of varieties of apples. I was aware of the large number catalogued. I expected to find these, and many more on exhibition. As I went from State to State it was Ben Davis, Rome Beauty, Winesap, Grimes, Jonathan, Baldwin, Northern Spy, Arkansas Black, Mammoth Black Twig, Wealthy, Genet, and in a few States Northwestern Greening and Albemarle. Outside of these, all might have been hauled on a market wagon. It is not hard to know what are the business apples of the world.

It was July 1 when I went to the Fair. Of course the apples on exhibition had been kept in cold storage. Their behavior there and when put on display was an item of great interest. It was quite observable that apples picked and stored before fully ripe did not behave well. A barrel of Genets from the north part of the State picked quite green, were still green and without flavor. None had rotted, but when placed on exhibition all had scalded, or rotted inside one week. Genets from my own orchard, fully matured when picked, had been on the plates one month when I took charge and were still sound when I left, three weeks later. Grimes from my own orchard, picked a little green and sent immediately to cold storage, never colored up nor developed flavor. Many were scalded when opened and all gave down in less than a week. Grimes from the north part of the State that had evidently colored up before packing were in fine condition, both as to color and flavor and stood up on the table for over two weeks. How do I know they were colored up before packed? I know it from their associates in the box. It is probable that Jonathan is the best of the good flavored apples for cold storage. I did not see one that was scalded, nor taste one that had lost flavor.

The State displays were not all equally meritorious. I hope Indiana's poorest display was while I was there. To say that I felt humiliated is putting it very mildly. Several of the packages I opened would not have graded No. 2 when packed. These had to be opened before a gazing public, and I could not do as our Iowa neighbors did when they opened an undesirable package, wheel it away to the dump. They had plenty, we few to draw from. We had to fill our tables with such as we had. Other States had put competent men into the field to hunt up and store good apples. They got them. We depended on the voluntary contributions of our citizens. We didn't get them.

One day when I was probably worried I observed that I imagined that I felt like there was a little possibility, though of course improbable, that

there was a little danger that all horticulturists were not angels. Just then my wife wanted me to go with her to see the Igorrotes, and I went. These unnatural observations were superseded by natural sights. Realizing the disquieting effect of such observations, I devoted my spare time to saving apple seeds for the experimental orchard. These might result in bringing blessings to the future horticulturists.

President Stevens: The next is Charles Lindley, of Salem.

OBSERVATIONS AND EXPERIENCES AT THE WORLD'S FAIR.

Upon the eve of December first the gates closed and there passed into history one of the greatest achievements of man—the Louisiana Purchase Exposition. No one can estimate the true worth of such practical teachings, to those who were permitted to view those massive buildings and learn lessons from their contents. Here we could compare every line of thought and every vocation of life with that of our sister States and foreign countries. The manufacturer, the machinist, the artist, the teacher, the agriculturist, and the horticulturist—all gave evidence at this great meet that there existed—that life of trade—competition, and over and above all that a social mingling together which showed clearly that no occupation is so fortunate as to be independent, but that a common brotherhood must exist for the advancement and upbuilding of a nation. Since this great and noble work has been assigned to the past, we must now take a retrospective view and note a few things that most impressed our minds from the horticulturists's standpoint.

On August 18th, with Mr. Fred Dickson, we took charge of the Indiana Horticultural Exhibit at the St. Louis Exposition and about the first thing worthy of notice was the opening upon August 21st of two barrels of cold storage apples—the last of the cold storage supply—these were one of Winesaps and one of Ingrams—grown in the orchard of and packed by Joe A., the apple man.

The Winesaps were perfect and two weeks from that day were in exceptionally sound condition. The Ingram barrel contained scarcely a sound apple. The most common remark made by those who were fortunate enough to taste the Winesaps was, "That's the best apple I ever ate."

A few plates of lemons and the Indiana bananas caused more curiosity and comment than all else combined in our exhibit. A common remark was, "I did not know Indiana was a lemon producing State." Many seeming to think that we were producing them for the market. The paw paw was a curiosity to many and if they had been ripe I believe there could have been a car load disposed of for tasting purposes only.

Many inquiries were made for the Black Ben Davis apple, but was sorry we had not even a sample while I was upon duty. The western States, however, had a fine showing of this variety which promises much profit in the future.

I must make special mention of the plum exhibit—a large number of which came from J. C. Grossman and Mrs. B. A. Davis. We could truly have said Indiana was far superior to any other State in her plum exhibit during the last week in August. We had at this time more plates than all other States combined. Indiana was rather handicapped in the manner of obtaining fruit for display, while many other States had large appropriations with which to purchase the choicest of the land. Indiana was at the mercy of public interest and dependent upon the great generosity of her fruit growers for her showing. Notwithstanding this serious condition I would say the Indiana horticulturist was generous and during my stay there, considering that the season was midway between summer and fall—a time when fresh fruits is at the lowest point, the display was exceedingly good. The tables were well filled.

Missouri, as right she should, had a most wonderful display. Beside the fresh fruits which were shown in abundance and of fine appearance, she had about 2,000 jars of preserved fruits and altogether near 400 varieties of horticultural products.

Iowa, Illinois, Wisconsin, Michigan, New York, Nebraska and Arkansas, all had most excellent exhibits and were well worthy of many hours' study, while Texas and California did the big thing as usual. I find it difficult to give even some observations in a paper limited to a few hundred words as this one is. But I am sure of this, that the observations which I made at this great fair will materially assist me in being a more enthusiastic and better horticulturist, and I doubt not that it will prove an inspiration to the horticulturists of our own State and of the world.

Mr. Tillson: I want to tell of a little experience I had there one Sunday, I think it was the first Sunday I was there. Several other States were represented—Michigan, Iowa, Wisconsin, and some other States—we were all bragging on our apples. I proposed a test. I said to them that their apples were all right, and were pretty good looking, but that they were not good for eating. This was the test. That we should select certain varieties of apples like the Grimes Golden, and some others, and select a committee of five that were not interested, and seat them at a table, and bring the apples in to the committee and they were not to know where the apples came from, but were to taste them and tell which was the best. We tested six varieties, and I'll tell you right here that the unanimous vote of that committee was for Indiana every time on the

quality of the apples. (Applause.) We took some of Mr. Burton's apples and some of Mr. Zion's Wolf Rivers and others that were just in the right shape, and they were away yonder ahead of those of other States. We also made a test between the north and the south and Mr. Burton's apples were ahead of the apples grown in the northern part of Indiana—the ones grown by Grossman. Indiana was ahead in quality every time.

President Stevens: I expect this is all the time we can give to this discussion this evening. Have you a speech to make tonight, Mr. Flick?

Secretary Flick: The people who are here assembled may remain here just as long as they please. There is no law whereby to close the doors at a certain time. You may stay and hold intercourse and get acquainted, and discuss such matters as you may see fit. All stay.

President Stevens: The Introduction Committee may now take charge.

The meeting stood adjourned and apples, nuts, cake and candy were served to about 300 people.

THURSDAY MORNING.

President Stevens: We will now take up the program where we left off last night. The first thing in order will be some more reports along the lines of the Observations at the World's Fair. We had a part of those on the program last evening. We will hear from H. M. Stout this morning.

H. M. Stout: Mr. President, Ladies and Gentlemen—I have no apology to offer for appearing before you this morning. If I had my way about it I would have been a listener rather than a speaker.

I feel very much out of place in discussing this subject in connection with such entertaining speakers and horticulturists as Messrs. Burton, Lindley, Swain and Grossman. However, I shall speak of some of the things that might be improved upon if we should again exhibit at a world's fair. I think that some one should be in charge of the exhibit who could devote all of his time to the work throughout the fair, one who thoroughly understands exhibiting fruit to the best advantage and the methods of the jurors in scoring the fruit and making their awards.

For example, some one sends ten plates of fine fruit. It would be better to make up one or two plates of the very best specimens of an even size and color and if they are good enough to score above 80, they will win a medal for the exhibitor and the other plates can be entered in the State's exhibit and the exhibitor will get credit for them there. There is little to gain in quantity and you may lose several points in quality. I confess that it was several days before I understood this and then only when

Prof. ——— explained it to me. This is only one of the many things that the person should know, but it will serve as an example. In some ways the Indiana exhibit reminded me of an agricultural exhibit when we first saw it. You know that is the fad now to exhibit some of the soil in which the plant grew along with the plant, but I did not know that it had reached horticulture yet. This is no reflection on those who preceded us in charge of the exhibit for we soon learned that each plate of fruit must be wiped off and the plate cleansed at least every second day. The ladies of our party did not go prepared to scrub, but they found plenty of it to do.

The Indiana display in the last days of September was one that all Hoosiers might well be proud of. It differed from any other exhibits in the fact that it contained no fruit of the crop of 1903, while some of the State's shows were made up almost altogether of storage fruits of last year's crop.

Indiana showed a greater variety of the larger fruits than any other and it was gratifying to have the judges come to Indiana to compare and identify fruits from all parts of the building.

Indiana horticulturists are well up in nomenclature and made very few mistakes in naming the fruit. I call to mind by Mr. Burton, the Bough apple. It was claimed by Mr. Irvin, one of the jurors, to be an old variety by a local name.

In looking over the exhibits of other States we found whole tables filled with a single variety of one of the leading commercial sorts, as Arkansas Black, Ben Davis, Jonathan, etc., while the greater part of the fruit shown by Indiana was fruit which has a general or local reputation for quality. This I think a compliment to the tastes of her people. They prefer to tickle the palate rather than the eye or fill the purse.

The pawpaw attracted no little attention and comment.

The wild nuts drew many questions from the visitors. And the Knox County watermelons were admired by all, without regard to race or color.

Of the foreign exhibits the ornamental training of fruit trees were the most interesting, and many other features of the horticulture part of the fair were of great interest, but space and time will not permit me to mention them. Upon the whole, every Indiana fruit grower should feel greatly encouraged by the State's success at the World's Fair.

President Stevens: I wish to add a word of explanation. The committee having charge of this exhibit realized the fact, as Mr. Stout has stated, that it ought to retain one person in charge all the time during the entire fair, but as our means was limited it was impossible for us to maintain one person there all the while. There was no individual that

could afford to stay there the entire time simply for his expenses, and the only thing we could do was to divide it among the fruit men who could afford to go there for a couple of weeks and carry on this exhibit. The only reason that one person was not put in charge at the beginning was on account of the lack of means. We only had five thousand dollars appropriated for the entire exhibit, for collecting fruits, cold storage, installation, and everything, and so we had to be very economical to carry it on at all. I say these few things by way of explanation.

We will now hear from Mr. J. C. Grossman, of Wolcottville.

J. C. Grossman: I did not take time to write a paper on this subject, because I saw that there were several on for papers and I knew that it would be so thoroughly discussed before my turn came that possibly everything would be mentioned by the speakers previous to me. But there are things that we can all learn. Possibly some of you would be interested in some things which I shall say. I spent a few days at St. Louis in the opening days of the Exhibition and assisted in arranging and putting out our display ready for the opening of the Fair. We had the assistance of Mr. and Mrs. Stevens, and they with the committee, did what they thought best at the time. There was a great deal of confusion among the exhibitors at the opening. We had arranged with Chief Taylor for plates of a uniform character, and we paid a big price for them. We had strict orders to have our exhibit in shape at a certain hour on Saturday, the first day of the Fair, but there were no plates on hand and it placed us in a very embarrassing position. What to do we did not know. After discussing the situation with the States which were close to us, and after discussing and talking it over among ourselves, we decided that for the reputation of Indiana we would make the best showing possible at the opening with what fruit we had in cold storage, if we had to "pile" it on the tables. Fortunately the Superintendent of the New York exhibit went to the city and borrowed or rented three thousand plates, and I caught a glimpse of them as they were unloading them and we rented about five hundred plates of him, and these we had at the opening. We selected from cold storage stock what we thought would represent fairly each portion of the State. Iowa decided that she would not show her best fruit at the beginning, but would save it and put out some that wasn's so good in the beginning. We did not just know what the character of all of our fruit was; we did not know whether it was all good, or whether there was some poor fruit among it. But we took representative packages from each district in the State, and as a result we had some very fine fruit at the opening—much better than a great many of the States. I think perhaps this was the best thing that we

could do under the circumstances. It gave our State the reputation at the beginning of having fine fruit and a good display. We did not have the fruit that we might have had, for we did not have the means to send men out to gather up the very best. We had to depend upon contributions, and they were slow in coming in. The fruit was poor in some sections of the State, and we did not get much fruit from those sections. Thus we were curtailed in the amount of fruit that we had, but we were very much pleased with the condition of our fruit. Nearly all of that that was opened at the first was in a first-class condition, and we did not lose out of the entire lot in storage but ten or fifteen per cent. of the fruit, and nearly everything came out in first-class shape.

As Mrs. Stevens mentioned in her paper last night some varieties scalded and would not keep after being put out there. Prominent among those were the Ben Davis, the Indian, and the Wagner. The Wagner especially was poor. On the other hand we had very fine apples, such as the Northern Spy, Tompkin's King, and numerous other varieties which were in perfect condition and kept for weeks.

Mr. Zion: How about the Wolf River?

Mr. Grossman: Well, I can hardly say.

Secretary Flick: They came out in pretty good shape.

Mr. Grossman: Yes, that is true. That is a pretty good apple, and it created much comment and always attracted attention. Men of twenty years' experience said they had never heard of it before. The apples were sound and stayed in fine condition, and when they were opened they made a very fine show. I think it was remarkable the condition they were in.

There was a discussion among the States as to whether or not they would make a show at first on account of not having plates, and there were a great many that were not ready. They did not have their places ready at all at the time of installation, and Missouri was one among the number. All she had was some preserved fruit, she did not have any fresh fruit at all at the opening; the same can be said of many of the other States. Ohio made no show at all. Pennsylvania, New York, Arkansas, Oregon, Kansas, Nebraska, Iowa, and ourselves, and possibly a few others made an exhibit at the opening, but Illinois didn't show anything; Wisconsin didn't open up any fruit at all. The orders were very strict that the exhibit was to be in good shape at ten o'clock on Saturday morning, the first day of the Fair.

I did not get back to the Fair again until the second day of October, and at that time everything was arranged nicely. I left the exhibit in

charge of Mr. Johnson, Mr. Flick, and Mr. and Mrs. Stevens. Upon arriving home I found I could not do anything in our section of the State until after the fall apples began to ripen. Berries were so perishable that we finally decided not to attempt to send them. We made one attempt and quit. We shipped plums and early apples. I made a weekly shipment, and I think I made some mistakes in sending. I was not careful enough in making my selections. I should have cut down the quantity and sent only the best specimens and a higher quality. As Mr. Burton has mentioned in his paper that was the fault with others, as well as myself. We were not careful enough, but it is hard to get fruit contributed, and it took us a good deal of time to get enough. This fall when I went this year's fruit was in its prime, and we had excellent fruit to make a show with. Just as everyone did when they first went there, I presume, we cleaned up, washed the dishes, washed the tables—and I'll tell you we had to do that frequently over there. We had a great deal of fall fruit the first day I was there or the first week rather, and we filled five hundred plates, but instead of limiting ourselves to that number we increased it to a thousand. Before I left we had a display fully equal to those of any of our neighboring States. We received many compliments on the state of things, and many people told us that we had an exhibit that was the equal of any of the States, and far ahead of a great many. Our fruit was fresher and brighter looking than some of the States, especially New York. While Illinois showed some varieties that were ahead of ours I did not think their general exhibit was equal to ours during the months of October and November. We showed a great many varieties. It was a noticeable fact that we had few of the inferior qualities of commercial apples on exhibit. The Ben Davis was scarcely visible among the other varieties. We had a few plates, but they did not make a show. We had more Grimes Golden, Jonathans, Northern Spys, Rhode Island Greenings, Snow, Mackintosh, and another variety of the family Fameuse, a Fameuse Sutre. It is a very showy apple, but has a poorer quality than the Mackintosh or the Snow. There were many things to learn there.

We received a few plates of fruit from Greencastle that received probably as much comment as anything we had on exhibit while we were there, and that was some plates of Grimes Golden, and some Salomes. They were said to be the finest specimens seen there. The Grimes were of average size, not quite so large as some we had, but they were as perfect as a specimen could be made, and they received a very high score. This gentleman must have given these trees a very perfect spraying and careful attention. The skin was perfectly clear and delicate and waxen.

We had many calls for apples from people who said they were from Indiana, and I think we were worked quite frequently. We found numer-

ous people, especially St. Louis ladies who claimed that they were born in Indiana, and wanted a taste of the Indiana apples. Of course we accommodated these people when we could. When we would be clearing off the tables the people would take the fruit and appreciate it even though it were specked, and we found out before we left that Indiana fruit had the reputation of being about as fine in quality and finer really than most any of the other States. We had more visitors seemingly than any other State in sight. I do not know whether the report had gotten out that we gave away apples or whether it was a fact that we had a more attractive exhibit.

Mr. Tillson made a statement last night in regard to the quality of the apples grown by Joe A. Burton in Southern Indiana. Possibly our apples do not ripen as soon, but they are just as good in flavor. We can grow better Northern Spys and Kings. Of course we can not grow the Winesap in Northern Indiana or the Jenett like they do in Southern Indiana, but we can grow good varieties that they can not grow in the south. I am confident that the quality of Indiana fruit is better than that of the middle west. We had many compliments from the jurors on the apples from Indiana all the time, so I can say without boasting that Indiana has the reputation of having fruit of the very best quality, and now all we need is men with capital to grow the fruit.

Oregon made a fine show of fruit. They put out a car load of fruit one week that was simply immense. They were fine specimens. The skin was perfectly clear and colored with the highest color and they seemed to be perfect in every respect. Of course it is understood that they do not have the quality that the Indiana fruit has. The western fruit, as a rule, does not. They showed them in boxes—a large portion showing the different styles of packing, and it was certainly a great display. They had apples that were immense in size. Such apples as the Spitzenburg, Jonathan, Winesap and others were placed in boxes with shelf paper around them, to take the eye of the customer, and of course they could sell them at a high figure. I was much impressed with their style of packing, and I am sure that apples will sell better when packed so nicely. If we would pack our fruit in packages that could be carried away in hand we could sell much more of it and get better prices. I think this is one thing we should learn. It is very hard to get apples packed correctly. These western packers have become so expert that they know from a glance at the size of an apple just how to place it in the package to make it fit. They have learned it from experience.

Mr. Swaim: It seems to me that there is not a great deal to be added to what has already been said here. I was at the Fair for two weeks.

I am of the same opinion as Mr. Stout, that it is a mistake to begin an exhibit of that kind without a superintendent that will stay there and follow out his own plans throughout the entire time. Of course the men that took care of this exhibit were competent and good men, but they all had different ideas as to how things should be conducted and it would naturally break up the continuity of the exhibit. Of course, as Mr. Stevens has explained, that mistake was made from the lack of funds. We were seriously handicapped, and I believe as Mrs. Stevens said last night, Indiana made the best show for the money invested of any State exhibiting there. If we could have had just a little bit more and employed a superintendent to stay there we would have had a far better show.

There were some few things that were of special interest there in our exhibit, among them was the watermelon. Now I was there when the car load of Southern Indiana watermelons were received, and I'll tell you they were fine. Many of the superintendents and jurors tested them and the highest compliments were paid on every hand to Indiana watermelons.

We found very many people that were really ignorant as to the native nuts, such as chestnuts, beech nuts, walnuts and hickory nuts, and a great many people from this State, especially the younger generation, were ignorant of what they were. They had never seen them in the State exhibit and they attracted a great deal of attention.

There was another thing attracted attention and that was the Hoosier banana, or the pawpaw. This is all I have to say in this regard.

Mr. Sylvester Johnson: I was not here last night and I realize that I missed a feast. I have been much interested in these remarks from the gentlemen concerning the World's Fair. I was there myself a good deal of the time. I was proud of the exhibit. I will say that the fruit was in fine condition while I was there. On the whole the exhibit was a success, and Indiana will have something in the future to be proud of on account of the exhibit.

Secretary Flick: I want to state that as far as possible the whole matter of the Horticultural Exhibit at St. Louis will be published in our annual report with all the details possible. We have kept a pretty accurate record of all who made entries and the varieties they entered. We have also kept a record of when the specimens were put on the table and when they were taken off, and all that we found out concerning the variety, and have kept these for future investigation. We are trying to see if apples from the northern part of the State, and those from the southern part of the State are equally well behaved in cold storage.

We are trying to find out if apples from a certain soil keep better in cold storage, than those from another soil, and there can be a great many facts worked out from this exhibit in this way. The number of exhibitors were about two hundred. The number of people that put their fruit in cold storage last year (1903) were about one hundred. I am not positive, not having the figures at hand. Altogether there were over fifteen thousand plates of fruit exhibited, or put upon the table. Visitors who saw on the tables only five or six hundred plates of fruit should remember we changed the fruit frequently, and that it took quite a lot to keep it running during the whole time of the Fair, about nine hundred bushels. Our showing of apples was good, and there is no doubt about that. Nearly everyone gave us that compliment, especially on the better quality of commercial apples. The committee at the beginning claimed that Indiana could grow a good sized commercial apple with more flavor, more color, better texture, and better keeping qualities than western States. We thought that we were right in that, and it seemed that everyone there, whether they were Hoosiers or not, wanted to taste our apples to ascertain. I think we did as much good in that as we could have in any other way. It caused us to have a reputation for apples of fine quality that few other States have.

I was much disappointed in the character of the Eastern fruit, the fruit from New England, and New York, and Pennsylvania. Their fruit was under size, but possibly this was because their orchards are old. The flavor was very good. New York is the home of the King, but they didn't show as nice Kings as we did. Neither did they show as nice Greenings, or their boasted Baldwins. They were not as nice as the Indiana apples in size, color nor flavor.

There has been reference made to the great showing of apples from Oregon. That was a compliment that they deserve. It was perhaps the greatest showing of apples ever made in America. It was the cream of their orchards. The superintendent told me that they had thousands of bushels of apples of an inferior grade that were lying on the ground and going to waste because there was no market for them. If they made a profit on their apples they would have to get two dollars a bushel when shipped as far east as Indianapolis. So we can infer from that that we have the advantage of these apple growers, for if we can get two dollars a barrel there is a profit for us. Every apple they sell must be a perfect apple, and they are at a great expense to assort them and ship them.

In reference to the nuts. Indiana did make a good showing of nuts. There were many kinds that I did not know we grew. There was one nut there which especially attracted attention. This was a cross between the pecan and the hickory nut. It was probably two inches and a

half long, and about an inch wide, and three-fourths of an inch thick. The shell was thin and full of the kernel, which had the flavor of the hickory nut. This nut came from Posey County, and like the pawpaw spoken of, we had a time keeping these nuts, for they were usually swiped.

As to keeping apples in cold storage we found nothing better than the Salome. They were picked at different times and crated in different ways and when they came out of cold storage they were in fine condition. We kept them on the table for a hundred days, from the first days of the Fair until the hot days of July and August, and they were in pretty good condition when we took them off. Of course they were wilted, but they were sound and I suppose they would have lasted until now if they had been left on the tables. I want to call attention to something else. The State early at the beginning of the Fair—or the committee, I should say—saw that we were badly in need of advertising literature, so they concluded to prepare a pamphlet entitled, "Some Facts about Indiana Fruit Culture," and we had them published, and distributed about ten thousand copies of them at St. Louis. It was something which the people were anxious to get and out of the ten thousand which were taken from the tables I discovered very few cast away in the corners or on other tables. I think we ought to do something more of this kind in the future, and this is one of the things which should be undertaken if we conclude to make the Secretary's office permanent. We should get out this kind of a pamphlet and spread it all over the country and I am sure they will do us much good. We will have to get more capital in our State before we can develop the fruit interest properly. I should like for each one of you to take one of these books home with you. We have enough of them for you on the table in the other room.

I think that none of us have a right to be ashamed of our exhibit at the Fair. It was the first State exhibit that the State has made. We were unused to such work—both the growers and the managers were —and possibly next time we can do better, but other States, even those who had been in the same business for ten or twelve years made mistakes, so I think we should feel satisfied and we hope that the growers of the State who have sent in their fruit will receive due credit from the jurors for all they have sent.

Sylvester Johnson: You made a mistake as to this being our first State exhibit. I think I took the first one to Philadelphia.

Secretary Flick: That was not a State exhibit, it was from the society.

Sylvester Johnson: I believe you are right since I come to think about it. I know I went there in 1876, but I believe it was simply an exhibit from our society.

Mr. Stout: I think one point has been overlooked, and that is to compliment the work of this society in doing what it has. Hardly any of those ten thousand plates of fruit were sent by anyone outside of this society. Almost every plate was from some member of this society and I think it deserves great credit.

Professor Troop: I have been listening to these discussions and it comes to me that one of the things that goes to make up a successful fruit grower is belief in the place where he lives. He must believe in his State and in the particular section of the State in which he lives, and think that it is the best place for growing fruit. If he believes this he is going to make a success of fruit growing. In listening to this discussion these things will crop out. Some think that Southern Indiana is the best place for growing apples, and Mr. Grossman insists that Northern Indiana is the best section for apples. Now Central Indiana can grow apples and good ones, too. I may say that while Tippecanoe County is not famed except around Clark's Hill for their fine apples, I sent some to the World's Fair from the experiment station and they told me that they were the best specimens that they had had, especially the Yellow Transparent. I intended to send every week until the close, but a big hail storm knocked my expectations all to pieces and the apples, too. Now I wish to leave the thought, that in whatever State we may be, or whatever section of the State we may live we must believe in that section and believe that it is the best, and that goes a long ways in making it a success.

President Stevens: I want to say here on behalf of the Indiana World's Fair Commission that we appreciate the work that has been done by Indiana—the Indiana Horticultural Society—and without the assistance of the various members of our society it would have been impossible for us to have maintained and kept up a creditable exhibit throughout the World's Fair. Most of the fruit growers of the State contributed their fruits gratuitously and put in a great deal of work for which no charge was made, and there were no funds to pay the charges if they had been made. So I want to say on behalf of the Indiana Commission and on behalf of myself as having charge of this exhibit, that we appreciate the work that has been done by this State Horticultural Society, and we hope that you will get credit for the exhibits made, and will secure your returns in the future.

In view of the fact that Colonel Logan has not yet come, we will take up the subject of "Gathering, Packing and Marketing Apples," by James M. Zion, of Clark's Hill.

Mr. Zion: I am surprised that I have been called so early in the day. I can not understand why I am put down to talk on so large a subject except merely to introduce the matter so that questions can be asked and it can be discussed, and I think that is all they put me on the program for. I have read a great many articles on picking and packing fruit, and I am always interested in all horticultural papers, and whenever I find an article I read it. They read nicely, and I have been pleased with some of them, but I would not attempt to follow them out. I want to take up the lines in connection with this subject on which I have had personal, practical experience. I think the first is gathering fruit.

President Stevens: Tell us what you think of the outlook for fruit growers.

Mr. Zion: So far as fruit is concerned, I think that the apple grower in the State of Indiana has a more promising prospect than those of any State in the Union. I am honest and sincere in this, for we can grow good standard varieties with fine flavors—better flavor in fact than any other State in the Union. I have tasted apples from almost every State. Of course there are certain varieties that will not grow in certain places in our State, but it was determined at St. Louis and on other occasions where tests have been made that Indiana grows a great variety of good, standard apples.

Some visitors, fruit growers, told me they did not know we could grow so many different varieties in Indiana. I told them to see what we were doing.

Secretary Flick: I want to ask you if you think there is any danger of Indiana growing too much fruit?

Mr. Zion: No, not of the right kind. If you will go to the railroad yards of this city and see the car loads and car loads of inferior apples that are being shipped in from New York in bulk you will think that the people of Indiana certainly can grow as good fruit as that. New York and other States are shipping a very inferior grade of fruit by the train load right now into Indiana and are finding a market for them. I have no trouble in finding a market for my apples.

But to return to my subject. The ripening period used to bother me a great deal. I have been talking about the growing of apples, now I shall talk about picking them. Some folks think you should gather

apples in the dark of the moon in October. I do not pay any attention to the moon myself. I read an article in an agricultural paper saying that apples should be picked on the tenth day of October, and things like that. Now there is no more reason why we should gather our apples at a certain date than we should cut our corn or oats on a certain date. Nature has provided a certain time for apples to mature, and there will come seasons when certain apples will mature quicker than at other times, and they will then begin to fall on the ground. The first that fall may have worms in them, but as soon as the good apples begin to fall to the ground, don't lose any time in gathering them. When you can put your hand under the fruit, raise it up, and it will separate nicely from the stem, then it is ready to be picked. This is the same with cherries, plums, pears, etc. It is sometimes best to gather three or four times from one tree. Just the same as with berries. This is true with the Hubbardston that my friend spoke about. You should commence in time to do this. This is also true with the Wolf River. There is one advantage in this. This apple is a good cooking apple when it is only one-third grown and we make apple sauce out of them. There are several varieties of apples that should be gathered this way. The Grimes Golden must be gathered quickly. As soon as they begin to drop we begin to gather them and put them in barrels and ship them to cold storage. I have the picking in mind when I choose my trees. I commenced buying trees fifteen years ago, and I called for a low top tree with a good stem and good roots. At that time many advocated high tops, but I was always in favor of the low topped tree. The stem should be protected from the cold wind and the hot sun. There is also an advantage when we go to gather the apples. Most of my apples can be picked from the ground. I can truly say that we can stand on the ground and pick one-half of the apples.

Walter Smith: Do they do as well when they grow near the ground?

Mr. Zion: I think so. I do not notice any difference. We have what we call a low down or handy wagon with a large platform, sixteen feet long and seven feet wide, which will hold from forty to fifty bushel baskets. We take everything we are going to pick off the trees and put it into the baskets. Now as to packing. I have tried packing right in the orchard, but it was very unhandy as the hammers were always lost, you couldn't find the nails, and it was very inconvenient, so now we do all of our packing at the packing house where we can have everything in readiness. In the packing house for two or three years I graded the apples. I am now trying a different plan with some of the varieties. I put the apples as they come from the tree in barrels and send them to

cold storage with the object of resorting them. I have found that if we shipped out a barrel of apples from cold storage that were sorted in the packing house, to the groceryman, and there happened to be half a dozen rotten apples, he would dock us from fifty cents to a dollar and a half on the barrel. They would tell us that the apples were in a very bad condition. Now I never let the apples go out until they have been sorted and when they go to the groceryman and he talks about there being rotten apples we know what kind of a man he is. We think it pays us to do this. If you do not the grocery man will take advantage of you and try to dock you if there are only a few rotten ones in the bunch.

Now as to packing in boxes or barrels. There are advantages and disadvantages in packing in boxes. I think it is an advantage when you have a very superior quality of fruit early in the year. At the fall packing time we come in contact with the apples from Michigan that sell for from one dollar to one and one-half dollars a barrel. We know that we can not compete with these prices. So the first thing I do is to ship my apples to cold storage, and after the other apples are off of the market I sell mine and get good prices for them. The apples that we would have to sell from one and one-half to three dollars per barrel we can get five dollars for when we take them out of cold storage. We have too many apples to compete with at that time. And with cold storage we now have a facility for taking care of our fruit and demanding better prices. I have this to say in regard to packing apples in boxes. I requires an expert to pack them. I usually ship my Yellow Transparents in boxes. They will bring from a dollar to a dollar and a half for a three-peck box.

For gathering apples that we can not reach from the ground I use a step ladder eight feet high, which is wider at the bottom than it is at the top. We use this ladder when we can not reach the apples from the ground or the platform of the wagon.

Walter Smith: How can you get such a wagon under the tree?

Mr. Zion: We run them under just as far as we can. I have a Saginaw handy wagon. I could not get along without it.

Mr. Burton: Do you have springs on the wagon?

Mr. Zion: Yes, sir, of course we have springs. We load them down with apples too.

Mr. Swaim: Do you get more money for your fruit in boxes according to the bulk than you do in barrels?

Mr. Zion: Yes, but there are exceptions. It is nice to talk about boxing apples but it is not so easy to do. It almost takes an expert to pack

in boxes. We should pack nothing but fancy fruit in boxes—those that have a nice color. In some regions it is necessary to use potash to get color. When they do this it cuts down the profit. This is true in Washington, but here the soil has sufficient potash to color nicely. We can grow fine apples with very little expense.

Mr. Swaim: I thought you said you would prefer boxes to barrels in some cases.

Mr. Zion: In some cases, yes; in early, fancy fruit.

President Stevens: I have observed that a number of fruit growers in our State are shipping directly to the consumer from the orchard. Have you had any experience along that line?

Mr. Zion: Not very much. My crop is too large to handle that way. One thing I have noticed and that is the groceryman charges the consumer about 40 per cent. profit and frequently sells culls at the price of fancy fruit. We should educate the consumer and when the groceryman insists on a high price for his fruit they should insist on a high priced fruit. They should demand good apples. There is where the trouble comes in. We must reach the consumer. This can be done by educating the consumer to demand good apples. I just wish you could see the apples that were shipped from New York in here. It is terrible.

Mr. Williams: What does it cost a month to put apples in cold storage?

Mr. Zion: Ten cents a month or thirty-five cents a season per barrel. They will not charge you any extra for six weeks over season-time, but if you do not tell them when you put them in, how long you expect them to stay, they will likely charge you for the season, because they do not like to be moving them around.

Mr. Hazelett: I would object to hauling the apples in baskets to the packing house. I think that the jostling in the baskets would bruise them. Of course such apples as the Ben Davis it would not hurt, but I should not like for a Yellow Transparent to be treated in that way.

Mr. Zion: I have not suffered any inconvenience. I get my apples to cold storage just as quickly as possible, and when we pack in the packing house we will sometimes work until ten or eleven o'clock at night to get them off and sent to the express station, and by the next day they are in cold storage. When we worked in the orchard we could not do this way. I have heard it said that the Ben Davis scalds pretty badly in cold storage, but I think this is caused by the apple not being gathered at the proper time.

Mr. Simpson: What kind of picking tables do you use?

Mr. Zion: I prefer taking the apples from the baskets and putting them into barrels. I can do this pretty fast; I can sort twenty-five barrels of apples in three or four hours myself. When three or four men are working it is pretty quick work.

Mr. Simpson: Do they all sort from baskets?

Mr. Zion: Yes, sir.

A Woman: Do you sort them when you gather them?

Mr. Zion: No, we take them to the packing house.

A Woman: What do you do with the refuse apples?

Mr. Zion: We make cider out of them. We do not have very many of them for cider. I do not have a cider press on my farm, for if I did I fear I would become a cider maker instead of an apple grower and I do not want to do that. The best way is to cultivate your trees, and spray them, and see that the rotten, wormy apples are taken out from under the trees and get fancy fruit. I am a firm believer in the fact that if you leave them under the trees they will injure the other apples.

————: Do you use a commercial fertilizer around the trees?

Mr. Zion: No, sir.

Mr. ————: I would like to know how the Wolf River does in Central Indiana?

Mr. Zion: I live in Tippecanoe County, forty-eight miles northwest of Indianapolis. I have been told by a man that has been all over the United States that he has never seen Wolf River apples that were as highly colored as mine are. I do not know what particular quality there is in my soil that causes this. It was remarked to me often at the World's Fair that mine were more highly colored than they could get them in their part of the country.

————: How would they do here at Indianapolis?

Mr. Zion: Indeed, I could not say for sure, but I think assuredly well.

————: What is the character of your ground?

Mr. Zion: It is good corn ground. It is an alluvial bed with a black subsoil.

————: Black soil on top with a clay subsoil?

Mr. Zion: Yes, sir.

Mr. Hazelett: Is there gravel under the soil?

Mr. Zion: I think not.

Mr. Hazelett: I have been raising Wolf River apples near Greencastle, this state, and they seemed to be very nice—they were very prolific—but I could not sell them. I had a hundred bushels or more that went to waste. They did this simply for want of a market. I could not sell them for half as much as I could the Yellow Transparent. I could not find Mr. Zion's market at all.

Mr. Hobbs: I would like to ask if your Wolf Rivers looked like Mr. Zion's.

Mr. Hazelett: Yes, sir. They were fine looking apples, but somehow or another I could not sell them.

Mr. Zion: Why did you let them go to waste? Why didn't you put them in cold storage?

Mr. Hazelett: I could not sell them out, and I was almost afraid to put them in.

Mr. Zion: That is what I do, for this apple comes when there is so much other fruit that I put it in cold storage and save it. It is too bad that you let them go to waste. I shouldn't have done it. Did you gather them at the proper time?

Mr. Hazelett: I think I did. As long as there were Wealthy apples I could not do a thing with the Wolf River. I had fifteen or twenty different varieties that would sell better than the Wolf Rivers.

A Woman: They are considered a good cooking apple but not a good eating apple.

Mr. Zion: I have always found the Wolf River a beautiful looking apple, and usually has a good flavor. There are exceptions. I might tell you that there were different notions about this. I sold a large amount of apples to the president of a paper company. He saw my apples at the State Fair and ordered ten barrels. I stated to him that the Wolf River was a fine cooking apple, but was not very good for eating. Not long after I delivered the apples to this gentleman I met him on the street, and he said, "Didn't you tell me the Wolf River was not a good eating apple?" I told him I believed I did. "Well," he said, "we think

it is one of the best we have." Now that was his opinion. It is getting to be the fashion in the hotels nowadays to serve baked apples in quarters, and the Wolf River fills the bill exactly. Of course there are different notions about this apple. If you will give it a fair test it will not disappoint you I am sure. I think it is a nice, mellow, good eating apple.

Mr. Lafuse: Speaking of cultivated orchards. Do you think you raise just as good apples by manuring and mulching, or by cultivating the fruit?

Mr. Zion: I am trying both plans. I have about fifty acres, and one half is under cultivation. I have kept it under cultivation for about eight years in order that the trees would have good, strong constitutions. I have kept them from bearing on purpose. If you take a single tree and plant it in a yard and neglect it it will come into bearing very early. I think we should cultivate an orchard for seven or eight years to keep them from bearing. You will get longer lived trees in this way, and they will be better trees. I sowed the orchard in beans and received from a dollar and a quarter to two dollars a bushel for them. This was an easy way of taking care of the orchard. After the beans were out of the way I gathered the apples. When the apples would fall I would put the pigs in to clean them up. Then I planted rye, or corn, or anything of the kind. I never let it mature, for that is what takes the life out of the ground. I believe in the mulch theory. I cultivate the orchard so that the roots will go down, then in the dry seasons the trees are not affected so much. If I do not do this the roots will be on top of the ground and the dry weather has a wonderful effect upon them. An orchard should be well underdrained. If there were a drought it would not hurt my trees. If it were not for this I would be in great fear for my fruit. It is very dry now in our part of the State, as well as in the southern part of the State. I am in favor of the mulching theory. I want to keep the roots down if I can.

President Stevens: Are there any other questions? We still have a few minutes.

Mr. Snodgrass: There have been many things spoken about, but Mr. Zion spoke of potash being the agent that colored the apples. It may be that I am mistaken, but I have read and have come to the conclusion that potash is not the coloring agent. The coloring agent is in the soil. I do not wish to say that this is true, but I wish to ask, am I right?

Mr. Zion: It is asserted that potash is the coloring agent. Of course most soils naturally contain some potash and color fruit well. I think

that the cool weather, changes in temperature, etc., do it. I am not authority, but I do believe the cool weather does it, or at least has something to do with it. Our beautiful colored apples come in the fall and winter.

————: We cannot say that this is always true, for apples grown in warmer regions are well colored, but I, too, think that the cold weather has something to do with it.

Walter Smith: You will notice that the side next to the sun is always colored, and the other side is not on most kinds of fruits. I think there is no question about the sun being the coloring agent. The better colored the apple is the better matured it is. I think there is no question about this.

Mr. Snodgrass: I was speaking about the coloring agent contained in the soil. I think we all realize that the sun colors the apple, or has a great influence in coloring it, but I am speaking of the agency in the ground, and asked what agent in the soil was the chief coloring agent? That is my question.

Mr. Smith: The sun does the coloring. It acts on something inherent in the fruit which the soil supplies.

Secretary Flick: The question asked just now has brought to my mind one thing which I have thought about often. We should have the apple studied from a scientific point of view. I think we should insist that our experimental stations take up the apple in like manner as the corn growers have taken up the subject of corn, and study it from a scientific standpoint: what conditions give color, what flavor, texture, etc. Now if this question can be answered it ought to be done. I think this subject should be studied in this way just as soon as possible. We have lost much because this has not been done. We have been studying fruit from an experimental standpoint only.

Mr. Howland: This question cannot be settled here. I think that a man that has lived as long as Mr. Zion has, should know that sunshine is essential to color, and also to flavor. An apple that has been hidden from the sun will not have the color nor the flavor of the one that is sun-kissed. You take any kind of fruit and it is the same way. The Kieffer pear is no account at all unless so situated; nobody likes it, and no one will have it. The sunshine has much to do with the quality of any fruit. My experience tells me that the potash and ashes would not add the color if it were not for the sunshine.

My friend spoke of reaching the consumer. If any of you can by any arrangement bring that about successfully, then you have accomplished a very great thing for the consumer, and for the fruit grower as well. When fruit lowers in price it takes the groceryman several days to find it out, as has been said here. It takes the middleman a longer time to find it out. He never is able to see that there is a great supply of fruit on the market and the prices down. If it advances he can see it the first thing in the morning. The first telegram will tell him, and he will immediately inform his customers that fruit is up.

The best thing we can do is to try to get some plan whereby we can rid ourselves of some of these middlemen. If we can do something like this we will be a great deal better off.

Mr. Kingsbury: What effect has sunshine on the human family?

Mr. Howland: It has the same effect on the human family that it has on apples. It is a health-giver. If the ladies would only get out in the sun more they would have more of a bloom on their cheeks, and they would be much sweeter.

Mr. Walter Smith: I do not know whether I am in order just at this time, but it certainly comes in connection with this question of sunshine. I believe in high-topped trees, as far away from the ground as possible and an abundance of sunshine. I think we can get better trees and can raise better fruit in this way. I would like for some of the experts to tell us something about the trimming of trees. That has not been discussed here. I would like to hear from Mr. Flick. He is an expert.

Secretary Flick: I could not tell you how to trim your trees. This is something which a man will have to learn for himself. There are so many different conditions. I trim my trees any time I see they need it when I am in the orchard and have a sharp knife. I try to cut off all of the dead wood and the water sprouts. If I cut off any very large limbs I have them painted as soon as convenient. I do not like high-headed trees in our climate. We are subject to storms of wind and hail and sleet and other things which make it hazardous and unprofitable to grow lofty fruit trees. There are many reasons why the trees should be low down. The trimming, spraying, picking the fruit, etc., is much easier and cheaper. Fallen fruit does not bruise, winds do not get such a hold on the low down tree. If you begin an orchard properly it will need but very little trimming. We ought to have an ideal in mind of the shaped tree we want, and at the beginning prune and leave enough branches to afford that.

Walter Smith: Would you leave a tree thin enough so you could climb through the limbs?

Secretary Flick: Yes, however we do not climb trees very much, for it hurts the tree every time you do that.

President Stevens: It is now our noon hour and we will adjourn for dinner. We will reconvene at 1:30.

THURSDAY AFTERNOON.

President Stevens: Ladies and Gentlemen: It is now time for this meeting to come to order. The first on program this afternoon is "Value of Statistical Information as Applied to Agricultural and Horticultural Pursuits," by Hon. B. F. Johnson, Chief of the State Bureau of Statistics, Indianapolis.

B. F. Johnson: It is with some little embarrassment that I come before you this afternoon and claim the right of making an apology for my appearance. I was somewhat mislead as to the time of this meeting. I was expecting this convention to come off about the 20th of December, and I have made very little preparation for this occasion. Possibly you are just as well off as if I had had two or three weeks' time to make what I might term the necessary preparations in that I will not take so much of your time and will leave it for more important business, possibly.

I am to speak upon the value of statistical information as applied to agricultural and horticultural pursuits. Of course it is generally conceded and recognized by all that statistics from any standpoint are good, but a man who could bring out of a statistical subject anything of an entertaining character might be regarded as a wonder. But, nevertheless, there is an individuality which has given this subject attention as something of importance and something interesting, and they may be presented to us from time to time. Perhaps there is no other line of business in the state of Indiana that is so difficult to locate in a statistical sense as the horticultural business, simply from the fact that there is less organization and less organized effort along that line than in many other pursuits of the kind. We are compelled to make use of the public officers in different counties and townships in the state. The law makes a provision from which we may get information from the assessors, trustees and public officials, but generally they know so little about horticultural interests—these public officials do not seem to come in touch with it—and so it has been a very difficult matter for us to get any figures upon which to base our horticultural pursuits. You take the average township, and there are 1,017 townships in Indiana, and in the average township, aside from the

general interest that may be manifested on the part of the farmers, there is very little attention to horticultural pursuits. Each farmer has an orchard for himself, but when the gatherer of statistical information comes along he does not have his information classified, and he is not able to give it in such a way as to be of value to the bureau, and hence we are not able, in a great many instances, to get information touching this line that would be of value to those who are interested in horticulture. This is not true in a sense of agricultural pursuits, because the people of Indiana generally are engaged in agricultural pursuits—that is their principal business. The horticultural work is simply a side line. The value of the reports along these lines, it may be readily seen, is of not much value to the student of statistics. The cultivation of a piece of corn in a certain part of the state by a successful farmer, under certain conditions, serves as an inspiration to the other farmers, and they try to see if they can be successful, and this leads to better results. I have before me an instance in which a man under certain conditions raised one hundred and twenty bushels of corn on a small acreage of land, per acre. The publication of that fact and the conditions under which it was accomplished, served as an inspiration and an incentive to other farmers to do the same along the same lines. For instance, if it can be shown that a farmer may sell one acre of clover hay for about eight dollars and he can add to that possibly six or eight dollars by selling the seed from the same, he is losing money, it will be of benefit to him. He has thus obtained say fourteen or fifteen dollars per acre from the clover crop, but in doing this he has not realized the results he should have realized. He is taking from the land that which he should have applied to the soil, and he has left the soil impoverished rather than enriched. On the other hand if the farmer pastures on his acre hogs and other stock, the same acre of clover that brought a return of fourteen dollars in clover hay and in seed, will produce twenty dollars' worth of meat. And at the same time he has left his soil in a good condition. He has done for the soil what he started out to do when he sowed it in clover. Now if these results can be given in the line of statistical information and the farmer can be made to know and understand that in the sowing of the clover and the feeding of the swine upon the land he is able to increase his income a very large per cent. and at the same time fertilize his soil, he has made a good point, and other farmers are willing to do likewise. The same thing may be said of the cultivation of wheat in a large way. There was a time in the State of Indiana when the raising of wheat was considered a profitable business. I can remember when there was but little wheat cultivated in Indiana, in the early days of our history, and I am not a very old man either, and yet I have seen the original forests of Indiana.

The first great trouble with us in growing wheat was that it would grow up so rank that it would fall down and we had to cut it with a sickle. This condition does not exist today. Why not? Simply because we have been raising wheat until we have worn out the soil. We have been robbing the soil of the phosphates and not supplying nitrogen to the soil, but have been selling it, and have kept this up until the land refuses to respond to our efforts to grow wheat. Now, what shall we do in this matter? Shall we resort to commercial fertilizers? What is a commercial fertilizer? What is the principal ingredient? What is the element we are supplying to the soil? Largely the nitrogen, when the cheapest source of that in the world is all around us, and if we will sow clover, and plant peas in our corn field after we are through cultivating it, they will do the work for us, and it will be better done than we can do it by commercial fertilizers. Peas are good fertilizer. They supply a small amount of phosphates, and a large per cent. of nitrogen, and we get good results. When we continue to raise wheat year after year on the same soil our land is impoverished. Statistics will show that these conditions are brought about by this kind of farming.

It seems to me that we should do something toward bettering the conditions of our farmers and encouraging them along better lines of agriculture at this time. It seems to me that this is one thing that should be done.

Now take up the cultivation of fruit. A few months ago I visited an old neighbor friend of mine in the town of Fowler, and he had in his back yard a very nice grape arbor and a few vines which were well cared for, and just across the way was a vineyard, of probably three or four acres, that was allowed to grow up in weeds and no attention was given to it scarcely. This friend of mine to whom I refer, had gone to the pains of spraying during the summer season. He had a rich soil, yet he used bone dust fertilizer around the roots of his grape vines, and he kept the ground stirred and in a good condition all the while. And he had the most luxuriant crop of grapes that you ever saw growing on a few vines. Every grape was perfect. It seemed to me that they must be equal to those grapes that the children of Israel found when they had been sent to the land of Canaan, and when they came back they came with a pole on their shoulder with bunches of grapes hanging across the pole, and reaching to the ground, and this was their report. This was a kind of a statistical report that they made. The fruit told about the fruitfulness of the land and the productiveness of the vines in that country.

Now the publication of things like this is of value to every man interested in the cultivation of fruit in the state of Indiana. If you find out a good thing do not be selfish about it; do not close up like a clam and keep

it from the world. Let your neighbors know it; let them know how you do things. There is no better way in the world to let things be known than to make a report to the Indiana Bureau of Statistics, or to the Secretary of the Horticultural Society and we will have it in our reports and the people will then hear about it and will understand the conditions under which you succeeded or failed, in the production of fruit or corn or wheat. These facts, as you know, should be made public. The same thing may be said of the production of the potato. Why, what do you think? Indiana is one of the best states in the Union for raising all kinds of farm produce, including potatoes, and yet, year in and year out, there is shipped into Indiana from other states hundreds and thousands of bushels of potatoes. I believe I am not exaggerating when I say that forty per cent. of the Indiana farmers buy their potatoes, the potatoes that they eat at their own tables. Am I not right? Yes, I am. Why is it? Why is it? Is it because we cannot raise potatoes in Indiana? It is not that, because there is not a corner in Indiana, be it ever so remote, but what potatoes can be cultivated successfully and with good profit. What is the trouble? Well, I am not going to tell you all of the things that are in the way, but I shall point out a few of them that come in to interfere with the farmer in raising potatoes. Bad selection of soil, bad seed, poor or improper cultivation. When you are planting plant the early varieties just as early as you can plant them, just as soon as you can get them into the ground in the spring. And when you are planting your late varieties do not plant them until about the fifteenth of June. Try the experiment of planting the late potatoes in June and then cultivate them just as long as the tops are green. Do not plow deep, but have some implements that will just loosen up the top of the ground and keep the top loose and conserve the moisture and prevent the ground from caking and see if you do not get potatoes, nine times out of ten. If you do not, charge it up to the Indiana Bureau of Statistics.

As I said in the beginning, what I have said to you I have said without any special preparation, and you may be very thankful this afternoon that I did not have a paper to read because it would have been longer, and I have told what I had to say just as well as if I had been reading.

I thank you very much for your attention.

Mr. Garretson: I would like to ask when he would break the ground to plant June potatoes?

Mr. Johnson: That would depend. I consider the best ground for the potato crop is land that has just been brought into cultivation. It is a good site for potatoes, and I should break it just before I planted my potatoes. If it were planted in clover I would turn it under and then

plant the potatoes. If I were preparing ground especially for the potato, the summer before I would put on a little barn manure, just a light dressing. There is no crop that responds so quickly and so readily and gives such results if you put on a little manure, as potatoes.

Are there any questions?

Mr. Snodgrass: I am growing potatoes. I have cultivated potatoes on the soil where I live, which I have brought up to a high standard of production from a point where it was almost a failure when I started in seven or eight years ago. I could hardly get as many out of the patch as I planted. It was not quite as good as the Irishman who planted a bushel and dug a bushel and never lost a potato. Sometimes I would lose a few. I think we should take the condition of the soil into consideration and see what fertilizer it lacks and supply it. I do not wish to take the floor away from the gentleman who had it at first at all, but I wish to add a few ideas which are in line with my experience. I do not think there has been anything said about treating the potato for the scab. A few years ago my potatoes were as scabby as could be; now you can not find a scabby potato. This is because I treated them for it. It will work most marvelously. A large potato crop is like a fruit crop. If we treat the potatoes for fungi as we do a fruit crop we will not have the scab. I produced 280 bushels per acre this year. I thought that was good. The dry weather struck us just a little bit too soon. I have been working for a potato that would produce a crop on black soil. It is hard to find a variety that will produce a crop on that kind of soil, but this potato will do it. It will grow a good crop on either kind of soil, one just about as good as the other, taking dry weather into consideration. We want a good rich soil for potatoes. I have never used anything but barnyard manure, but I used it freely. I used twenty tons to the acre, and I have found that it pays. It must be rotted. A potato does not want coarse manure.

Mr. Howland: I do not think anything should be given in this society that is not founded on facts. We should not endorse anything that we can not prove to be true. My experience tells me that the ground should be broken for the potato that you plant in June, just as soon as it can be broken in the spring. I would have it broken just as soon as it becomes dry enough to break. It is far better than to wait until the first or tenth of June to break it. I should have it broken just as soon as it is in good condition to break. It will then retain the moisture better all summer on account of its being broken early in the spring, and if you keep stirring it on top I think you will have a better crop, because very frequently, if you wait until June the ground will be dry and will remain dry all the

time, and then your potato crop will not be good. So don't forget this. Break the ground in the spring just as soon as it is in a condition to break, and keep it stirred on top.

My friend over there talked about the scab that he had on his potatoes. He thinks that he has a preparation that will remove it. Well, maybe he has. I hope he has. So have I. I haven't one like he has. Mine is to change the potatoes' ground. This is the same thing as the spraying business. It is a mysterious affair. Some will tell you that they sprayed and never had so many worms in their life. Another will tell you that he sprayed and had a great success. The surroundings have as much to do with this as the season. I think you had better spray. I do not think there is any harm in it.

President Stevens: I think this is about all the time we can devote to this subject. The next on program is the report of the Committee on Awards, by Mr. E. Y. Teas.

E. Y. Teas: Your committee begs leave to make the following report of awards:—

APPLES FOR MARKET.

Six varieties for market for Central Indiana.

S. T. S. Williams, Knightstown, first.

J. M. Zion, Clarks Hill, second.

PLATES.

Baldwin, J. M. Zion, first; Chris King, Rushville, second.

Ben Davis, Chris King, first; Simpson & Son, Vincennes, second.

Benoni, Chris King, first.

Duchess of Oldenburg, Chris King, first.

Fallawater, S. T. S. Williams, first; Walter S. Ratliff, Richmond, second.

Fameuse or Snow, H. W. Henry, Laporte, first.

Gideon, J. M. Zion, first.

Grimes Golden, S. T. H. Williams, first; Samuel H. Hazelett, Greencastle, second.

Hubbardston, J. M. Zion, first; Frank Moffett, Carmel, second.

Indian, Chris King, second.

Indiana Favorite, R. L. Beck, Connersville, first; Chris King, second.

Rawles Genett, J. C. Grossman, Wolcottville, first; W. B. Flick, Lawrence, second.

Jonathan, Frank Moffett, first.

King, S. T. S. Williams, second.

Lawver, R. J. Moffett, first.
Mann, R. L. Beck, first; J. M. Zion, second.
Northern Spy, Frank Moffett, first; S. T. S. Williams, second.
Northwestern Greening, S. T. S. Williams, first; W. S. Ratliff, second.
R. I. Greening, J. M. Zion, first; Chris King, second.
Pewaukee, S. T. S. Williams, first.
Rome Beauty, Samuel H. Hazelett, first; S. T. S. Williams, second.
Roman Stem, Frank Moffett, first; Chris King, second.
Salome, S. T. S. Williams, first; Samuel H. Hazelett, second.
Stark, Chas. M. Lindley, Salem, first; J. M. Zion, second.
Wagener, H. W. Henry, first; S. T. S. Williams, second.
Wealthy, Chris King, first.
White Pippin, Chas. N. Lindley, first; Frank Moffett, second.
Winesap, Simpson & Son, first; R. J. Moffett, second.
Wolf River, J. M. Zion, first.
Willow Twig, Chas. N. Lindley, first; W. B. Flick, second.
Yellow Transparent, Samuel H. Hazelett, first.
York Imperial, S. T. S. Williams, first; Samuel H. Hazelett, second.
Yellow Bellflower, Chris King, first.
Meritorious variety not included above, Simpson & Son, first for Aiken.
Largest apples, J. M. Zion, first for Wolf River.

PEARS.

Kieffer, Chris King, first; J. M. Zion, second.
Winter Nelis, J. M. Zion, first; H. C. Swaim, second.

MISCELLANEOUS.

Orange quince, Chris King, first.
Champion quince, W. B. Flick, first.
Plate and collection of persimmons, Jas. A. Little, Cartersburg, first; H. H. Swaim, second.
Collection native nuts, Jas. A. Little, first.

CUT FLOWERS.

Round bouquet, Mrs. W. B. Flick, first.
Flat bouquet, Mrs. W. B. Flick, first.
Collection mixed cut flowers, Mrs. W. B. Flick, first.

Sylvester Johnson: Mr. President, I move you that this report be concurred in.

Mr. Simpson: I second the motion.

The motion was voted upon and carried.

President Stevens: We will now have a report from Prof. Troop.

Prof. Troop: Mr. President, I know that we were generally expected to give a report of the work done during the year, and although it was not on the program I prepared something of a report, because I considered that the office of the State Entomologist is of importance to fruit growers. It has been customary to give a report of the work that is done during the year, and although this report is not complete, still it gives a practical summing of the things that we have been doing. I want you to hear it because I want you to realize if you can the importance of the work.

REPORT OF THE STATE ENTOMOLOGIST.

BY J. B. TROOP.

The work of this office during the past year, like the year previous, has been confined principally to the inspection of nurseries and orchards, and to giving information concerning the hundreds of questions that have been asked in regard to the San Jose scale and other insects, etc. I have been unable to do much more than this on account of the limited funds at my disposal.

When the present nursery inspection law was passed by the General Assembly of 1899, the principal object in view, seemingly, was to provide means for guarding against the introduction and spread of the San Jose scale, which was being introduced into the State from other states upon nursery stock, and which was so much dreaded by all fruit growers. It was the opinion of the committee having the bill in charge that the present appropriation, viz., one thousand dollars, would be a sufficient amount to defray the necessary expenses of carrying the law into effect. It was thought, no doubt, that all that the State Entomologist would have to do would be to inspect the nurseries of the State once a year, and if found free from injurious insects, etc., to grant the owners certificates to do business. If that were all that is necessary, then the present appropriation would be sufficient. But an experience of six years has shown that, while the inspection of nurseries is very important, it is really but a small part of the work that should be done, even in connection with the San Jose scale alone. As there was no restriction on the interstate shipment of nursery stock previous to the passage of this law, a large quantity of scale-infested stock was shipped into the State and planted out by the unsuspecting fruit growers. As a result there are a number of localities in the State which are seriously infested with this insect, and

where thousands of dollars of damage has been done, and it is still spreading to new localities, so that this is the most serious part of the problem which confronts us, and which can be properly dealt with only by putting a competent man in the field, as has been done by both Illinois and Ohio, and keeping him there until the people have become educated up to the point where they can do the work themselves. The remedies now recommended by entomologists are inexpensive and easy to apply, but somewhat difficult to make properly until one learns how; and so the novice is very slow to undertake it, fearing that he will make a failure of it, and, in fact, that is often the case.

Then, too, only a comparatively few persons are able to identify the San Jose scale; and so it often happens that whole orchards become infested before anything wrong is suspected by the owner. An instance of that kind came to my notice the past year. A peach orchard in southern Indiana, containing neary four thousand trees, was found to be dying. My attention was called to it and I found that the whole orchard was infested and the scale had been there so long that almost every tree was completely coated with it. Under those conditions the only thing that could be done was to destroy the whole orchard. It was a serious loss to the owner and one that could have been avoided had it been noticed in time. More than that, it had been serving as a breeding ground for the scale for several years and other orchards in the same vicinity had become infested. It is safe to say that the saving of that one orchard would have been the means of saving more money to the community than the entire appropriations for this work amount to in five years. And this is only a single case of many that could be mentioned. With an additional appropriation of two thousand dollars a year for this work the State Entomologist could employ competent men, with the necessary outfit, to go into these infested localities and give demonstrations as to the preparation and use of the spraying mixtures, and supervise the work generally. This, in my opinion, is the only way we shall be able to succeed in getting control of the San Jose scale in this State.

In order to show that the amount asked for is within reason, it may not be out of place to state that Ohio has appropriated $10,000 and Illinois $6,000 annually for this same work.

SCALE-INFESTED DISTRICTS.

During the past year the San Jose scale has been found in several new localities, and in a few cases it was found so near to nurseries that it became a serious question as to the advisability of giving the owners certificates, although the nursery stock was to all appearances free from

infestation. In all such cases we have advised the nurserymen to take the matter in hand and see that the instructions given to the owners of infested stock were carried out.

Last year thirty-two counties were reported as having had the scale. To this list may now be added seven more, viz., Warrick, Orange, Daviess, Jay, Hancock, Randolph and Elkhart. Vanderburgh County is perhaps the worst infested county in the State—at least, more infested orchards have been found there than elsewhere. During the summer I visited the Southern Insane Hospital, near Evansville, and found that the authorities there had destroyed a good many trees and shrubs according to the directions given one year ago; but there were others badly infested which were condemned. My assistant, Mr. J. G. Gentry, found several infested orchards near McCutcheonville, in the same county, but the owners had been using the spray pump to good advantage, so that the outlook in that locality is quite encouraging.

The only infested trees found thus far in Orange County were in Paoli, and these had been given such vigorous treatment that scarcely a live scale remained at the time of my visit in August. Princeton, Gibson County, however, was not so fortunate. Here the scale was found to be pretty well scattered all over the city, and while the city council finally took some action concerning it, yet practically nothing had been done, and the insect was left to continue its depredations indefinitely.

In the town of Linton, Greene County, where so many of the houses are either owned or rented by miners, who have but little time or inclination, for that matter, to devote to such matters, the condition is even worse than it was a year ago. Here, too, the town authorities, I believe, ordered all infested trees to be destroyed, but made no provisions for carrying the order into effect; hence the usual result. It is of no use for towns or cities to pass laws relating to this matter without making some one responsible for their enforcement.

A few weeks ago I received a scale-infested branch of an apple tree from the village of Fortville, Hancock County. I visited the place and found that in one orchard, situated in the edge of town, nearly every tree was more or less infested, and some were so near dead as to be past saving. Here, as in many other places, I found that the trees which were originally infested came from the Hoover & Gains nursery, Dayton, Ohio, some years ago, before the firm went out of business. I was informed that the agent who sold those trees also filled several other orders there, so it is more than likely that other orchards in that locality are infested.

Mr. H. H. Swaim, Assistant Inspector for the northern end of the State, reported two cases of the scale in the town of Redkey, Jay County, and one in Union City, Randolph County. He also found ten city lots in the city of Marion which were more or less infested.

Owing to the watchful eye of Sylvester Johnson, I was enabled to locate the presence of scale in several city lots in Irvington, and prescribed remedies for the same.

During the first week in December I received some scale-infested branches from Washington, Daviess County, which is the first intimation of infestation from that quarter. Judging from the appearance of the specimens it has been there for some time, and will require heroic measures to eradicate it. In all of these cases the owners have been given copies of the law governing their cases and advised concerning treatment. In some cases the seed has fallen on good ground, and is bringing forth fruit, but in others it fell among the briars and was apparently choked.

OTHER SPECIES OF INSECTS.

No serious outbreaks of other injurious species have been reported to me during the year, although hundreds of letters have been received concerning different species and their treatment.

The woolly aphis has been quite troublesome in Switzerland and a few other southern counties, but this is found more or less common every year in these localities.

During the latter part of the summer I received specimens of the elm borer (Saperda tridentata), which was said to be doing much injury to the elm shade trees in the city of Vincennes. This is one of the insects which is very difficult to treat after it once gets into the tree, and so we must depend very largely upon our friends the parasites for help in holding them in check.

The cottony maple-scale (Pulvinaria enumerabilis) was reported as doing a great amount of damage to the shade trees of Kentland, Newton County.

The corn-root worm (Diabrotica longicornis) has again been heard from, and it will continue to make itself known as long as farmers continue to grow corn after corn indefinitely.

A new species of aphis was discovered on some Houghton gooseberry plants on the grounds of Mr. George Blue, Indianapolis, where they were doing considerable damage. A curious fact about this insect was that it seemed to be very partial to that one variety. Mr. Blue had planted a five-acre field to Houghton, but there was an occasional mixture of some other variety. In no case was the mixture touched, while the Houghton plants on either side were badly damaged. Not being able to identfy the species, I sent specimens to the United States Entomologist at Washington, D. C., who informed me that it was a new species, never before reported. As I was not able to secure the winged forms of the insect, a detailed description will have to go over till another year.

NURSERY INSPECTION.

During the inspection period, which extends from June 1st to October 1st, we have inspected one hundred and fifty-eight nurseries. Some of the old growers have gone out of business and several new ones have started in, so that the number remains practically the same. One was refused a certificate on account of the presence of San Jose scale, and several others whose stock was found to be too close to the danger line were required to fumigate all stock before sending it out.

FINANCIAL STATEMENT FOR THE YEAR ENDING OCTOBER 31, 1904.

RECEIPTS.

Amount received from the State Treasurer on vouchers submitted to State Auditor	$999 99

EXPENDITURES.

Traveling expenses, including hotel bills and livery hire	$261 65	
Postage, express and telegrams	20 42	
Stationery and printing	41 67	
Per diem of self and assistants	676 25	
		$999 99

President Stevens: Any questions or remarks?

Prof. Troop: I desire to say, while it is fresh in my mind, that I very much desire to get this matter before the Legislature this winter in a way that they will take some action and give us more help, and I would like very much if every one of you who are here would assist, and I hope every farmer and fruit grower will make it a point to see your Senators and Representatives and explain matters to them, so that when it comes up before them they will know what it means. These things often come before the Legislature, and before the Committee on Appropriations, and they do not know what the value of it is, and they consequently pass it by, but if you will make it a point and see your various representatives at home before they come here and explain matters and tell them just what is needed, it will go a long way.

Mr. Apple: Mr. President, the Auditing Committee have the following report to submit:

"Your committee, appointed to audit the accounts of the Secretary and Treasurer, report that they have carefully examined the books and vouchers and find them to correspond with each other, and believe them to be correct.

Respectfully submitted,

JOSEPH C. RATLIFF,
J. W. APPLE,
CHARLES N. LINDLEY."

Mr. Swaim: I move that the report of the Auditing Committee be accepted as read.

Mr. Grossman: I second the motion.

The motion was voted upon and carried.

President Stevens: We are now ready to hear the report of the committee on the President's address. Mr. Swaim, will you take the chair?

Mr. Swaim took the chair.

Mr. Zion: To the Members of the Indiana Horticultural Society—Your committee, to which was referred the annual address of our President, W. W. Stevens, report that we found pleasure and instruction in his review of the past and present horticultural conditions of the State and the urgent need of our people being instructed in modern horticultural methods and how to market their products—and that our society must also enlarge its labors, become progressive, practical and businesslike in order that it may meet and carry out the increasing demands of our horticultural people and domestic consumers—that our people may no longer be required to depend upon New York and other far away states for inferior "bulk" apples.

We have carefully considered his recommendation that the horticultural interests of our state are now in such a promising condition as to require the constant attention of a Secretary, and that our society shall have exclusive use of Room 11, according to former arrangements, or else secure other rooms that our exhibits, records and literature, may be properly cared for, and that the office be open daily to the people and the public. We recommend committees to secure financial means and rooms as suggested.

We also recommend a resolution that our Secretary be authorized to inform President Roosevelt, the Postmaster General, and our Congressmen and Senators that our society unanimously demand a parcel post

system, such as is in England, which will enable our fruit growers and gardening merchants to deliver their products to consumers at about one-fourth the exorbitant, prohibitive rates now demanded by our express companies.

J. M. ZION,
H. M. STOUT,
Committee on President's Address.

There is also a minority report.

Chairman Swaim: We will now hear the minority report.

Mr. Custer: Your committee, to whom was referred the President's address, report that we found pleasure and instruction in his review of the past and present horticultural conditions of the state and the urgent need of our people being instructed in modern horticultural methods and how to market their products, and that our society must also enlarge its labors, become progressive and businesslike in order that it may meet and carry out the increasing demands of our horticulturists and domestic consumers, that our people may no longer be required to depend on New York and other far away states for inferior bulk apples. That our society shall have the exclusive use of Room 11, according to former arrangements. We also recommend a resolution that our society be authorized to inform the Postmaster General that our society unanimously demand a parcel post system that our fruit growers, gardeners and merchants may have the benefit of such system.

All of which is respectfully submitted.

L. B. CUSTER.

Mr. Custer: I move you, Mr. President, that the minority report be accepted.

Sylvester Johnson: I second the motion.

Mr. Tillson: It may be possible that I don't hear very well, but I didn't hear so much difference. The majority report was simply a little longer. I wish the committee, or some one else, would explain the reports.

Mr. Zion: One is progressive and the other wants to keep right along in the old ruts. I think this society should be progressive. I think we should carry on the business so that it would be a credit to the state. The majority report asks for an appropriation large enough to give us a permanent office and a secretary who shall devote his whole time to the work and keep the office open as a headquarters for horticulturists where

there may be kept on exhibition specimens of fruit in its season, a museum of insect pests, diseases, etc., so that they may instruct the people and disseminate knowledge among the people who come there for it. I think we should have a concurrence in the majority report.

Professor Troop: I want to ask Mr. Zion if they made a recommendation as to the amount of an appropriation they want?

Mr. Zion: We did not do that, but we might.

Mr. Custer: The majority report is like the minority report except that it contains more. The minority report strikes out from the majority report: "We have carefully considered his recommendation that the horticultural interests of our state are now in such a promising condition as to require the constant attention of our Secretary or some other practical horticulturist." Then further we strike out: "and open such to the public." The minority report leaves these two sentences out. This is what we do not want.

Mr. Zion: I feel that I should say something more in reference to this. It seems to me that the minority wants to remain in the same old business rut, so they think we do not need to do anything further. Now we want to get out of this old, antiquated rut. We must make progress, and I do not think we are asking any too much from the State Legislature. I think we should have a room open to the public every business day in the year.

Mr. Custer: I am opposed to that.

Mr. Zion: I believe we are able to keep open a room in the city of Indianapolis every business day and every business hour in the year, and transact business, and I want this proposition properly put before the Legislature to show them why we want an increased appropriation, and how we want to use it, for I believe the Legislature will be liberal and give us the contribution if they understand why we want it. There should be some way for horticulturists who come to the city to get information and knowledge, and they could keep sending in exhibits at different times in the year. I would be glad to send specimens of my apples at different times. I am deeply interested in this matter, and if we are to remain in the same old rut our society and our state will be injured and so I am opposed to continuing the association the way it has been running for the last five years. I think we should have ten thousand dollars from the State of Indiana. The agricultural board received that sum from the State of Indiana, and why not the horticultural board. I hope the resolution that was offered by the majority of this committee

will go through. We want a headquarters and we must have money in order to have them. We appeal to you now. This is a good proposition and I think it will meet with favor so I ask that the majority report be concurred in.

Mr. Hobbs: I am in favor of the majority report with this exception: That is, let us first secure the appropriation and then we can adopt this open office method, but I think it unsafe to attempt to keep an open office before we get the appropriation. My experience with the Indiana Legislature in the last twenty-five years has lead me to believe that they are very uncertain in regard to appropriations. I am in sympathy with all progressive ideas.

Mr. Zion: If you will read our report you will see that is what it means. We suggested that a committee be appointed to petition for the appropriation for this purpose. Of course if we do not receive the appropriation we cannot have an open office.

Mr. Custer: There is nothing in your report that would indicate that.

Mr. Swaim: Mr. Hobbs has the floor.

Mr. Hobbs: If we can secure a sufficient appropriation from the Legislature to keep an open house during the year I am in favor of doing it and I think thereby we will advance the horticultural interests of the state. I am not in favor of the majority report unless it carries with it the idea of the appropriation first.

Mr. Custer: Neither report referred to the appropriation first. Neither one of these reports says a word about the Legislative Committee and the appropriation.

Mr. Zion: If you'll read the report you will see.

Mr. Custer: I can not find it in the majority report. Possibly you had better find it for me.

Sylvester Johnson: I seconded the motion to adopt the minority report, and I had as I thought very good reasons for doing so. I think the majority report very impracticable in the first place. That room over there was set apart for the State Horticultural Society, but it does not control it exclusively and other organizations in the state can have their meetings there when they want to. Mr. Flick and I have met in that room every Friday, and I think that fully one-half of the time when we

have come there that room has been occupied. It is used for public meetings, committee meetings, associations, etc. Other arrangements will have to be made if we keep it open permanently. The State House Custodian claims that it was set apart for meetings, etc.

Mr. Howland: It looks to me that this society needs to make progress or quit business. I think Indiana is behind the times if we cannot afford to do what Massachusetts did thirty years ago, to my certain knowledge. Thirty years ago I went to Boston and was passing along down the street and I passed by an open door and saw quite a few gentlemen standing around and I discovered that there was quite a fruit display there —everything that was growing in that season was there—and I asked what the meaning of this was. I asked them why there was so much fruit on display. They informed me that this was their custom, that they always displayed the fruit of the season in this room and the public was invited to come in at all times and inspect it and ask questions in regard to its cultivation. Now that was thirty years ago. I had the pleasure of visiting an institution of the very kind you are advocating right there in Boston. It seems to me that with the rapid strides Indiana has made in the last thirty years that we ought to have arrived at the point where we can afford to do what Massachusetts did thirty years ago. If our society is worth anything, it is worth everything to us, and we should induce the Legislature to carry on this institution by giving us the means, and in this way benefit the whole citizenship of the State of Indiana. There is no good reason why the Horticultural Society of the State of Indiana should not receive encouragement from the state. Other institutions do, and there is no good reason why we should not. I have been in many of your meetings, but I never took an active part, because I was not a fruit grower in what you might call a wholesale way. I grow enough fruit to feed my family and friends. I would be pleased to see this society take a step forward instead of backward. I think that this is a small thing to ask for. The horticulturists of the State of Indiana contributed largely to the building of this State House, and we have a right to demand certain things, and we are entitled to them. We have a right to ask for a room and an appropriation sufficient to run it.

W. W. Stevens: I have one word to add. I have considered this matter very carefully and I have nothing at interest but the success of the society, and in my address I made such a recommendation as I thought was for the best interest of the society and state. When I took into consideration that we had an appropriation of fifteen hundred dollars it

seemed to me that it was time to take advanced steps, and I see nothing that we can do until we enlarge the duties of our Secretary or some one competent to give advice along horticultural lines in this state. It did not seem to me that we could do this work successfully with the appropriation we have now of fifteen hundred dollars. Two hundred and fifty dollars must go to keeping the experimental orchard. That leaves one thousand two hundred and fifty dollars. It seems to me that we might cut down our little outside expenses, but I hardly think we could cut them down that much. This would leave something in the neighborhood of nine hundred dollars to do this work with, and I think we could then go before the next Legislature and ask for more substantial aid. In regard to this room. We have only been occupying it one day in the week. When we vacate it the other days of course the custodian will permit its use to hold meetings. When it is used by other persons it is impossible for us to keep records and things there. We have a right to an office in this building the same as the Secretary of the Board of Agriculture and the State Statistician, or any other officer that is doing state business. Whenever we occupy a room all the while, there will be no trouble in getting a room assigned to us for our exclusive use. If there is anything better than my suggestions I am ready and willing to take it up, but I do insist that we take advanced steps to advance the horticultural interests.

Mr. Tillson: In the first place we can not get a man for less than twelve hundred dollars. It seems to me that we can use the money to a better advantage than to pay it to a Secretary. I do not think it would be advisable to hire the Secretary to stay in the office.

Mr. Flick: I would like to make this statement. The reason that the Secretary does not do his work here in the office is because we can not keep our records here and I can not afford to be carrying them back and forth from the residence to the office here. We know this, that it would not necessarily cost twelve hundred dollars to keep a person in the office. It is not necessary for the Secretary to stay in the office, but the office could be kept open and someone could be there to take charge of things and answer questions at any time at a much less sum. We might have the office occupied by a young man, a woman or girl that could fill the position. She could keep up the correspondence, keep the office open, etc., and it would not necessarily cost much more that it is costing at the present time. That woman or man or girl, whoever it might be, could do the routine work in the office, and the Secretary himself could be at outside business. He could be going about over the state working up an

interest in the society. We are not trying to influence anyone, but we want to get these facts before you. The State Forestry Association maintains an office with two assistants. What do they do in that office? For what does our State Statistician keep an office open with three or four assistants? Our State Board of Agriculture keeps an office open and a man, and employs a typewriter the year round. If this much work is necessary and profitable in these branches of our State Government, why not necessary in this? I think we should think of these things seriously and if we can not settle these questions ourselves in convention we should refer them to a committee and have them report on it.

Prof. Troop: It has been stated here that we can not keep our records in that room. I would like to know why it is impossible? We have desks there with locks on them, and it seems to me we could keep things safely.

Secretary Flick: When the office was turned over to me I found scarcely anything there but an empty desk and a considerable pile of books called a library. Nothing could be locked. The locks were broken. I went to the trouble of having a locksmith make new locks, but the same thing happened again.

Prof. Troop: What are the janitors in this building doing?

Secretary Flick: It is a public room and the public can come and hold their meetings because it is claimed that it was set apart in that way.

Prof. Troop: What are our custodians here for? Shouldn't they be seeing about this?

Secretary Flick: I do not see that they could do anything under the circumstances. The fact is we have lost property out of that room when under lock and key. That room is open for all sorts of meetings according to the laws governing the State House. It is open to the public for meetings. I understand there are numerous keys, so that quite a number have access to the room, at pleasure. As I understand the report we were to have some other room that would be set apart especially and exclusively for this society.

Chairman Swaim: There are other matters to come before this society this afternoon and we would like to hear this report read. It has been called for.

Mr. Zion then read the majority report.

Chairman Swaim: The question before the house is to adopt the minority report upon the President's address.

A rising vote was taken and the motion was lost.

Mr. Zion: I move the adoption of the majority report.

Mr. Howland: I second the motion.

Mr. Reed: I move, as an amendment, that this report be referred to a committee to be acted upon next year.

Sylvester Johnson: I second the motion.

Mr. Zion: This is simply a matter of killing good time. We have tried the strength of this convention, and I feel that we should proceed with business.

Mr. Howland: If that motion carries it means that this matter must go over for two years, for the Legislature will not meet again for two years. I think we should take it up at once.

Chairman Swaim: The question is on the amendment.

Mr. Hobbs: I am perfectly willing that this shall be referred to a committee with power to act favorably in case they get the appropriation. I am willing that this money should be spent in this way if we get the money to spend. I do not care to commit myself unless I know how this is going to come out.

W. W. Stevens: For your benefit I will say that I recommend it be referred to the Executive Committee with power to act. That was the recommendation.

Mr. Tillson: I move an amendment to the amendment by stating "the Executive Committee."

Mr. Reed: I accept the amendment.

A rising vote was taken and the amendment was carried.

Chairman Swaim: The amendment is carried, and the President's address will be referred to the Executive Committee with power to act. Will you now vote on the majority report?

Sylvester Johnson: I am not much of a parliamentarian, but I think when a matter has been moved and seconded and carried in reference to referring a matter to a certain committee that that is the end of it.

Chairman Swaim: I think we can take action on the majority report. This was an amendment to the report and the acceptance of the report carries with it the amendment.

It was voted upon and carried.

Chairman Swaim: Will you now take the chair, Mr. Stevens?

President Stevens: Are there any other reports, Mr. Secretary? There were some more reports to come in from the different districts. Are they in?

Secretary Flick: I do not believe they are all in, Mr. Chairman.

Prof. Troop: I move you that these reports be handed to the Secretary without reading them, and that they be included in his report.

Mr. Stout: I second the motion.

It was voted upon and carried.

President Stevens: The next thing on the program is the election of officers.

Mr. Tillson: I move you, Mr. President, that we proceed at once with the election of officers.

Mr. Swaim: I second the motion.

The motion was voted upon and carried.

Mr. Zion: I make a motion that a committee be appointed by this society to look after the furnishing of material to the Indiana Farmer for publication along horticultural lines.

Mr. Stout: I second the motion.

The motion was voted upon and carried.

Mr. Snodgrass: I do not believe, Mr. President, that these gentlemen are in order. We were to proceed with the election of officers.

Under the usual procedure the following nominations and elections were made:

Messrs. C. W. Foote, H. H. Swaim and Warder W. Stevens were nominated for President. Upon balloting Mr. Stevens was elected.

H. H. Swaim was nominated for Vice-President and upon motion was elected by receiving the entire vote of the convention.

C. M. Hobbs, Sylvester Johnson and L. B. Custer were nominated for Treasurer. Mr. Hobbs and Mr. Johnson withdrew and the entire ballot was cast for Mr. Custer for Treasurer.

Prof. Jas. Troop and W. B. Flick were nominated for Secretary. Upon balloting Mr. Flick was elected.

Mr. E. Y. Teas was elected as member of the Executive Committee.

The following were elected members of the Committee on Horticulture: W. J. Ritterskamp, Princeton, First District; W. C. Reed, Vincennes, Second District; Chas. N. Lindley, Salem, Third District; John Tilson, Franklin, Fourth District; Jas. Little, Cartersburg, Fifth District; D. E. Hoffman, Winchester, Sixth District; J. J. Milhous, Valley Mills, Seventh District; A. W. Shoemaker, Daleville, Eighth District; J. N. Snodgrass, Kirklin, Ninth District; H. W. Henry, Laporte, Tenth District; Snead Thomas, Marion, Eleventh District; J. C. Grossman, Wolcottville, Twelfth District; C. W. Foote, South Bend, Thirteenth District.

President Stevens: The election of officers having been completed, what is your further pleasure?

Mr. C. M. Hobbs: It has been customary to appoint the Legislative Committee in open session, before adjournment.

President Stevens: I would prefer that the society appoint the committee.

Thereupon the society appointed C. M. Hobbs, John Tilson and W. B. Flick, as the Legislative Committee.

Secretary Flick: Inasmuch as Mr. Sylvester Johnson, who has declined to serve any longer as Treasurer and in which office he has served us so long and faithfully, I deem it fitting and proper to offer the following resolution:

I move you that we extend to Mr. Johnson, our faithful Treasurer, a rising vote of thanks as a small token of our appreciation of his long and efficient service as Treasurer of this society.

Mr. Grossman: I most heartily second the motion.

The motion was unanimously carried.

President Stevens: What further business have you? If none, a motion to adjourn is in order.

Mr. Kingsbury: I move that we adjourn.

Mr. Stout: I second the motion.

The motion was put to vote and carried and the President declared the adjournment.

MISCELLANEOUS PAPERS—REPORTS FROM DISTRICTS AND SOCIETIES.

REPORTS OF MEMBERS OF THE COMMITTEE ON HORTICULTURE FOR 1904.

(The following letter was addressed to members of the above committees a month previous to the annual meeting:)

Dear Sir—Please prepare for the annual meeting of our society, December 7 and 8, 1904, a report of the condition of horticulture in your district. We desire to obtain a full report from each district of the State. The idea being to learn the conditions of the different districts and the state at large and devise, if possible, plans for a forward movement all along the line. Your assistance is indispensable in this instance. Perhaps from two to four pages of legal cap space would be about right for the length. You might cover points of:

1. General conditions. Is there any advancement or decadence in your district in horticultural matters?

2. Farm orchards and plantings. Are farms generally supplied with orchards and fruit gardens? Are they well cared for? Why? Any new plantings? Particularize.

3. Commercial orchards and gardens. Any commercial orchards? Gardens? Give names of owners, postoffice address, and area. Is it a profitable investment? What can suitable fruit land be bought for per acre for this purpose?

4. Any forward movement with regard to the beautifying of public school grounds, country roads, parks, etc.?

5. What local horticultural and civic societies in your district? Please give name of president and secretary with postoffice address of each.

6. Suggestions: In your opinion, what is needed to better conditions in your district, etc.?

The above is merely suggestive, and you may follow your own ideas as to the nature of the report, however, avoiding the old plan of rehearsing the crop conditions of the previous seasons. Keep in mind that we want something as a basis for planning future work.

Hoping to see you and your family at our annual meeting and earnestly soliciting your active co-operation in the work of our society.

I am, yours truly,

W. B. FLICK,
Secretary.

Reports have been received from almost all the thirteen districts in time for publication.

REPORT OF CONDITIONS OF HORTICULTURE IN FIRST DISTRICT.

To the Members of the Indiana Horticultural Society:

Gentlemen—Being familiar only with conditions in Gibson, parts of Vanderburgh, Pike and Posey counties my report will not be complete as to the entire First District. The general condition of orchards in above named counties is fair, as nature has been generous in providing conditions that orchards once planted and fairly well cared for for a few years generally take care of themselves pretty well ever after.

Nearly every farm in this section has its orchard. Sometimes covering an acre, more often five or six of them, while there is quite a sprinkling of commercial orchards near Princeton, Oakland City and Hazleton, covering in most instances from forty to eighty acres of land. Quite a per cent., probably 15 per cent. of the older setting and near 60 per cent. of the newer, are pear, mostly Kieffer, and the soil and climate seem well suited to grow fine Kieffers, nearly fifty car loads of them having been shipped from the immediate vicinity of Princeton. Whether or not apple orchards are paying I do not know. Pear orchards are, while peach orchards are being cut down as unprofitable. Some of our leading apple growers are Hon. C. A. Buskirk, Henry Yeager, A. D. Green, E. P. Downey, all of Princeton; Rev. Wm. Strickland, Francisco; Mr. Spain, Hazleton; Col. Cockram and ————, of Oakland City.

Ben Davis is the only apple grown here in quantities, while Grimes Golden and Jonathan are being liberally set in late years. Land suitable for orchards would cost from $25 to $30 per acre for broken, hilly sites, up to $80 to $100 for fairly level loam near our cities.

Gibson County will have upwards of 100 miles of rock roads when all have been finished that are now under construction and the other counties are fast following in the improved road movement. Patoka Township will have some fifty miles when those now under construction

are made. Considering that all the material must be brought by rail from thirty to sixty miles distance at an enormous expense, this is a creditable showing.

If more plain and definite knowledge were spread among farmers as to how, when and what with and wherefore to spray we could have some splendid fruit. There is little spraying done here, excepting Messrs. Buskirk, Yeager, and a few others who practice it some.

W. J. RITTERSKAMP.

HORTICULTURAL REPORT FOR FIFTH DISTRICT.

The past season has been about an average one. Small fruits yielded well and prices were very satisfactory. Boxes and crates, however, were hard to get and prices higher. Some fruit lost from this reason. Cherries were short and wormy, while plums were overabundant, fine quality and light demand and low priced. Peaches were plentiful in some localities, but trees were allowed to overbear, causing fruit to be small and undesirable. Pears set a full crop but blight was the worst for years, causing not only the fruit to drop but many trees were ruined. Apples where sprayed were an average crop, but the neglected orchards were a complete failure, practically speaking. Twig blight was prevalent in most localities and did much damage to newly planted orchards of which there are some fine ones in this district. Generally speaking interest in horticulture in this district is on the wane. Most farmers have an orchard and some small fruits, but tney are badly neglected and are breeding places for all bad insects and pests. Repeated trials have been made to organize local societies, but those sufficiently interested are so widely separated that not enough members can be secured in any locality.

The need for a live society in each county is manifest. Rural school grounds are unattractive, farm homes do not receive the attention they should, while roadsides are grown up with weeds and brush. This does not apply to every section, however, as we have some as beautiful country homes and well kept roads as can be found in the state, but the neglected is too much in evidence. The rush for money and attempt to run too much land is mainly accountable for conditions.

There are some paying orchards here, but land is too high priced to offer inducements to fruit growers, the price ranging from $40 to $100 per acre.

Berries and small fruits which seldom fail and always pay well are grown commercially, but not as much as should be.

The only hope for a change is in educating the rising generation by teaching agriculture, etc., in the public schools.

EVAN B. DAVIS.
Plainfield.

REPORT FROM SIXTH DISTRICT.

Richmond, Ind., December 6, 1904.

To the Indiana State Horticultural Society:

Your committee from the sixth congressional district begs leave to make its second annual report as follows:

I have not taken the privilege to visit other counties of my district, but to take Wayne County as an average the general conditions of horticulture have not been as good as former years, and especially last year, the late, cold spring caused much of the fruit buds to miscarry, even where there was an abundance of bloom. The apple crop generally was small, knotty, wormy, and inclined to rot on the tree, even the Ben Davis was hardly worth picking. Farmers mostly have just orchard enough for their own use, and take but little care of them. Time in their crops is too precious during spraying season for that work. I am not aware of many new orchards being set out. No doubt a systematic order of spraying would help clear the knotty and wormy ones. While our own apples are poor, the markets are full of as fine apples as ever grew, and cheap, ranging from fifty to seventy-five cents a bushel. They come mostly from the north. Pears fared much as the apple, except the Kieffer, which were fine and in abundance. The blight played havoc with most of our trees.

Peaches not much good. Last winter was too cold and the buds were killed. Wayne County and the Sixth District never had such a crop of plums as the past season, both in quality and quantity. The curculio seemed to sit back in awe of the big crop and did not bother it much.

As to smaller crops, the strawberry took on a second bloom and made a full average crop of first-class berries. Dry weather set in and spoiled the prospects of a fine raspberry and blackberry crop.

The farmers generally are not so well supplied with fruits as they should be. It is not the fault of the soil, neither so much in the climate, as pure neglect and carelessness in the farmers themselves. Those that have orchards or fruit of any kind adapted to this climate, where they put their heart and time to the work make a success. Mr. Dougherty and Mr. Whitely, near Cambridge City, are examples. There is much land in the Sixth District that is broken and hilly, well adapted to fruits of almost any kind suitable to this climate. This land can be bought for from thirty to fifty dollars per acre, inviting anyone with but little capital who is willing to put his brains and hands to work in that direction, on the road to success.

I cannot name all the horticultural societies in this district. It is their duty to report individually to the state society. The Wayne County Horticultural Society flourishes and sends in its annual report without fail.

As to good roads and civic societies: Improvement in the way of good roads has become a necessity in order to secure rural mail routes. There has been much done in the way of grading and graveling, so that the country roads in Wayne County may be considered from fair to good. As to beautifying the roadsides by planting trees, shrubbery or otherwise, very little, if any, is to be seen. We have a civic society organized within the city of Richmond for the purpose of beautifying the city and country around about, but its work has been mostly confined to talk and essays, without any perceptible signs of improvement by the outside world. There is a great need of work along this line. Mostly, country school houses are neatly arranged, artistically built, with neat fences and shade trees surrounding them; also supplied with libraries. It seems to me one of the greatest needs of the farmer today is encouragement in the way of planting fruits, especially small fruits for domestic purposes. A majority of homes are without these delicacies only as they are bought from the gardener. This should not be. I have answered inquiries as I understand them, and filled my allotted space.

CALEB W. KING,
Member of Committee.

REPORT FROM THE SEVENTH DISTRICT.

(Composed of Marion County, Indiana.)

There seems to be quite a diversity of opinion in this district on matters of horticulture. Some sections are decidedly of the opinion that horticulture is a flat failure, that the farmer who plants trees, vines and plants for fruit is entirely behind the times, because it is an established fact that trees, vines and plants will not pay the owner anything but work and worry and produce a place to spend his money. While in other localities farmers are awake to the fact that there is money in fruits, and lots of it where the right kinds are planted and cared for.

There are many farms in the district where there is not a half dozen fruit trees to be found anywhere on the farm, and no raspberries or blackberries only those growing wild along the fence or in the woods. A grape vine can not be found. Why? A single vine costs fifty cents, and who can afford such extravagance as that? And, as to strawberries—the idea! You might know there is nothing of that kind on the farm.

There are localities where every farmer has a good orchard of apple, pear, peach, plum, cherry and quince, with an ample supply of grapes,

while strawberries, raspberries and blackberries are in such abundance that it takes many hands to harvest the crop, and large loads are taken daily to market, usually with good returns. In these neighborhoods we usually find better health and more contentment than in the localities which are the opposite.

There are but three commercial apple orchards in the district, viz., W. B. Flick, Lawrence, Ind.; Ed. Eickhoff, Wanamaker, Ind., and Chris. Muesing, Cumberland, Ind. (The latter ten acres planted in the last two years.)

There have been quite a number of Kieffer pear orchards planted in the last fifteen years, but a number of these are on the decline on account of blight, some of the largest pear orchardists reporting from 75 to 100 trees dying yearly.

Many farmers plant trees each year and sow oats in the orchard as soon as the trees are planted, or before, and of course they soon become discouraged.

One great drawback in this district is the price of land, there being but little that is at all suitable for fruit growing that can be purchased for less than $100 per acre, while a great deal of the land suitable for fruit growing is worth from $300 to $500 per acre.

There has been but little attention given to tree planting along the public highways from the fact that so few men have, as yet, learned the value of beauty. The school grounds are as a rule without any trees, only those supplied by nature before the school house came. Arbor day is observed in many places, but the trees are so poorly planted, and illy cared for that scarcely one in a hundred ever grows. As to parks we have none save those about the city of Indianapolis, which are becoming places of beauty.

The groves were God's first temples and today the grove is a fitting place to meet and hold sweet communion with Him.

One correspondent in answering the question, "In your opinion what is needed to better conditions in your part of the county?" says, "Every man to vote the Republican ticket at our elections, to vote all the saloons out of existence and kill all the dogs and drive the 'nigger' back to his home in the south. There are other things badly needed here. We need more ready cash here in Perry township to buy votes with, and we have a few chicken thieves to spare."

I think this is a fair sample of many of the would-be horticulturists, getting some things where they ought not to be, and doing others which are ridiculous in the extreme, hence, with them horticulture is a failure.

J. J. MILHOUS.

For Eighth District report see page 49.

Report from Ninth District received too late for this report.

HORTICULTURAL REPORT, TENTH DISTRICT.

The Tenth District is composed of the counties of Laporte, Lake, Newton, Jasper, Starke, Pulaski, White, Benton, Warren and Tippecanoe. The north border is Lake Michigan, and is cut in two by the Kankakee River. The valley of the Kankakee has been a low marsh, mostly covered with water, but the past few years have made a wonderful change in this part of the district. The river was dredged and cut into one deep channel. Land that was nothing, ten years ago, but bogs and the home of the bullfrog, snipe, dogfish and the residence of the hunter and fisher, has been turned into valuable farms that are covered with corn fields, the finest in the State. This land, which fifteen years ago could be bought for $2 per acre, is now, much of it, worth from $40 to $75 per acre. This valley and black prairie soil found in most of the counties, especially Newton, Pulaski, Starke, Benton, Jasper and White, I do not think will ever be a fruit growing section. It is all right for small fruit, but is not the soil adapted to the growing of tree fruits.

The north tier of counties, including Laporte, Lake and Porter, contain soil and conditions that are suited to the growing of all kinds of fruits. This strip runs through the central part of the counties and is from twenty to twenty-five miles wide. The south shore of Lake Michigan and inland three to five miles, in most places a very light sand, is not good for fruit. The climate conditions are not the same on the south side of the lake as on the east, where are located the great peach belt of Michigan. The reverse seems to be the condition, as peaches will not do as well along the south shore of the lake as they will farther inland. We raise better peaches twelve miles south of the lake shore than they do close to it, and get a crop oftener.

Along that strip of land, which I have described above as being suitable to fruit culture, there has been in the last ten years considerable advancement. There has been a large number of orchards planted, none on a very large scale, but I believe that they will run up into the hundreds that will go beyond an acre or more. There has been an improvement in the care of old orchards, but the improvement along this line has not been as great as it might be.

E. S. Smith, of Westville, is one of the best apple-growers in the northern part of the district. His orchard is kept in an up-to-date condition by proper cultivation and spraying. His apples consist mostly of Prolific Beauty, Baldwins, Jonathan, Northern Spy and a few scattered varieties. He has a cold storage in connection with his orchard and markets most of his apples during the season at retail, or direct to the storekeeper.

Dr. O. L. Sutherland, of Laporte, has the next largest orchard in the northern part of the district. His orchard is not kept in as good a condition as it should be. He also has a large orchard of peaches, plums and some pears.

Wm. M. Walton, of Laporte, is a new convert to fruit-growing. His orchard is about eight years old, and consists of plums, peaches, pears, cherries, currants and gooseberries, covering about thirty acres. It is in the pink of perfection, and several thousand bushels of plums were sold this season. His orchard is an honor to the fruit-growing industry, and a good object lesson. He is an enthusiast of the first class.

A. J. Barnard, of Porter county, has a large pear, cherry and plum orchard about six years old. He is also quite a small fruit grower.

Sam B. Wood, of Lake county, postoffice Lottieville, has planted several hundred fruit trees in the last few years, consisting of apples, cherries and peaches.

James Hamilton and George Biglow, of Porter county, planted 1,000 cherries nine years ago.

There has been several thousand peach trees planted in Laporte county during the past two years. I could continue this list indefinitely, and on the whole I think horticulture in this part of the district has held its own and has made some good advancements.

I have some thirty acres in orchard and small fruits myself. All have been planted in the last ten years. The planting of trees and small fruits in the past ten years which has come under my personal observation will amount to at least 300 acres. Some of these plantings have been a failure on account of the carelessness of the planter. But where the plantings have received proper care and cultivation they have proved a valuable investment, emphasizing the fact that the soil and climate conditions are suitable to fruit growing, if the right man is at the helm. There is no cheap land in this district suitable for fruit growing. Most of the good fruit farms and orchards are on land worth from $60 to $150 per acre. All the land I am using for fruit growing cost me $150 per acre, without any improvements. Mr. Walton, referred to above, paid $200 per acre for his land.

I confess I am not personally acquainted with the southern part of my district, as it is one of those "shoestring" districts, longer than the moral law, and takes in Tippecanoe county, the seat of the best school in the State, and also the home of more State officers than any other county in the State, and the home of our friend, J. M. Zion, of Clarks Hill, an apple grower of State and national reputation; a man we are proud of having in our district. While I never had the pleasure of visiting or seeing his orchard, I am sure that it is kept up-to-date and an excellent

example for horticulturists to follow. Most of us have had the pleasure of seeing his apples at our meetings and at the State Fair, and without his assistance at the World's Fair one of the best parts of the display would have been lacking. Taking out the Kankakee marsh, the Lake Michigan sand knolls and the prairie land of the district, I am safe in saying that the Tenth District can make as good a showing as any other part of the State and that there has been satisfactory improvement along all lines of horticultural work during the last ten years, and that we are in good condition to keep them up and moving.

H. W. HENRY,
Laporte, Indiana.

For report from Eleventh District, see page 51.

ANNUAL REPORT OF J. C. GROSSMAN, COMMITTEEMAN FOR THE TWELFTH DISTRICT.

To the Indiana Horticultural Society, in annual session December 7 and 8, 1904:

Mr. President and Members of the Society—I respectfully submit the following report:

The Twelfth District is composed of the counties of Steuben, Lagrange, Noble, Dekalb, Allen and Whitley, situated in the northeastern corner of the State. These six counties are the eastern portion of the northern fruit belt and are in the celebrated lake region of Northern Indiana. The study of the topography and geology of the district discloses hundreds of excellent orchard sites that would be the equal of any section in the State if some one with capital would develop them.

Our Secretary sent me a suggestive outline, embracing a number of questions along horticultural lines as an aid in making up my report, in order to bring out certain facts relative to the present horticultural conditions of the district.

This outline I have endeavored to follow as far as practicable, and as a further aid towards having this report accurate and reliable, I sent the same questions to several persons in each county in my district, asking them to report to me. A number of them complied with my request and I incorporate their replies in my report.

Following are the questions sent out:

(1) General Conditions.—Is there any advancement or decadence in horticultural matters?

(2) Are farms generally supplied with orchards and fruit gardens? Are they well cared for? If not, why? Any new plantings?

(3) Any commercial orchards? (Give names of owners and postoffice address.) Is it a profitable investment? What can suitable land be bought at per acre for this purpose?

(4) Any forward movement in the beautifying of country school grounds, public roads, parks, etc.?

(5) What local horticultural and civic societies? Give names of society, President and Secretary, with postoffice address.

(6) In your opinion, what is needed to better conditions in your district?

We received replies from seven correspondents up to the evening of the 6th.

W. F. DeVilbiss, Fort Wayne, Allen county, reports:

1. General conditions, of recent years, have improved. Yet most farmers haul apples to market in bags or in open wagon beds.

2. Most farmers have apple orchards, but few fruit gardens. Both are cared for as the ordinary farmer does this work.

3. There are six or seven who make fruit growing a specialty: Henry Tilbury, Fort Wayne; Israel Luther, R. R. 4, Fort Wayne; James Sheridan, Fort Wayne; Samuel Kinsey, Harlan; James Baxter, R. R. 3, Fort Wayne; W. F. DeVilbiss, R. R. 4, Fort Wayne. Yes, it is a profitable investment. Suitable land can be purchased for from $75 to $100 per acre.

4 and 5. Very little. The Civic Improvement Society, of Fort Wayne, and the Home Makers' Association of Allen County are working along these lines.

6. More public spirited men and women.

H. M. Widney, St. Joe, Dekalb county, reports as follows:

1. About holding our own.

2. Think there is a decrease in farm orchards. Not properly cared for. Cause—Neglect and lack of interest. But few new plantings.

3. Yes. Howard Northrup, J. D. Leighty and H. M. Widney, all of St. Joe. Cherries and apples are profitable, but peaches and plums a failure. Price of orchard land, $45 to $100 per acre.

4. Some; not near what it should be.

5. One Farmers' Club at St. Joe. Also, our county organization in support of Farmers' Institutes. Farmers' Club: H. M. Widney, President, St. Joe; R. Wyatt, Secretary, Auburn. Dekalb County Farmers' Institute: President, H. M. Widney, St. Joe; Secretary, M. S. Delving, Sedan. No horticultural society.

6. A rousing horticultural society. We are debating the feasibility of this matter now.

A. G. Lodewick, of Auburn, Dekalb county, makes the following report:

1. There is a decadence in horticulture in this county.

2. No. No. Neglect. Very little.

3. I know of no commercial orchards in full bearing. I consider apples and cherries profitable. From $50 to $100, depending on location.

4. Some improvement.

5. There is no horticultural society in the county.

6. The land well adapted to profitable general farming, and farmers not inclined to assume the extra work and chances of fruit growing. More thorough spraying, trimming and cultivation would improve the conditions of orchards already set.

J. W. Moorhouse, Albion, Noble county, Secretary Noble County Horticultural Society, reports:

1. There is marked advancement along some lines of horticulture, especially in vegetable growing.

2. They are. But most orchards should be replaced with new trees. Gardens are often poorly kept.

3. Not to my knowledge. At least there are no orchards worthy the name of commercial orchard. Land suitable to apple growing can be bought for about $60 per acre.

4. Yes; there is.

5. We have a Grange at Albion. P. J. Stanley, President, Albion; Forest Parker, Secretary, Albion.

6. Better management, more hard work and absolute free trade.

Wm. E. Kinsey, Salem Center, Steuben county, makes the following report:

1. There is a growing tendency in fruit growing as in other kinds of business, to specialty.

2. Orchards are not being planted as fast as they decay, but a few are planting largely and make it a business to supply local demands.

3. There are some commercial orchards, viz.: Jerry Dutter, Angola, Ind.; —— Johnson, Ashley, Ind.; Frank Johnson, Hudson, Ind. I have 2,000 plum, 400 peach in bearing. Land suitable for fruit growing can be bought at prices from $50 to $75 per acre, owing to location and improvement.

4. No; not as to school grounds or parks. Road improvement is gradual and constant.

5. None to my knowledge.

6. Anything that will create and maintain an interest. The dollar is what all are hunting for. Show them that it will pay and you have them.

Angola, December 4, 1904.

Mr. J. C. Grossman:

Dear Sir—Your letter of the 29th inst. came to hand, but was delayed in transit, so my reply will be later as a result. I am not well prepared to give the information you wish, as I am engaged in general farming and know but little of horticulture, but will do the best I can in a general way. To the first would say, there is an advance along these lines; no organized movement, but one that is obvious to an observer. Farms are not generally well supplied with orchards and fruit gardens, but while orcharding may have declined, fruit gardening has certainly much advanced in the last ten years. Orchards are not generally well cared for. Where a farmer has but a few trees or small orchard, he is almost certain to neglect to properly care for his trees.

From my observation farmers are yearly planting trees, apples, peaches, pears, etc., but to neglect them or let them take their chances. "'Twas ever thus."

There are but few commercial orchards in the county. There is a plum orchard in the west part of the county, owned by W. E. Kinsey, address Hudson, Ind.; the Highland Fruit Farm, once owned by L. D. Creel, now owned by Samuel Geely, Fremont, Ind., who is continuing the business of orcharding small fruits, etc. Jerry Dutter, Angola, Ind., is a raiser of fruits and berries. He has been in the business for many years and has made a success of it. The business is profitable if conducted with care and system. With regard to the price of land suitable for the business, will say that such land might be bought a few miles from a town or railroad station for $50 per acre; would be worth $75 or more near Angola.

There is no movement in the beautifying of school grounds, as far as I have observed, and very little in roads or parks. The movement with respect to schoolhouses seems to be in providing them with libraries, which has been quite successful. I will not point out the difficulties of beautifying school grounds; they must be obvious to you. There are no horticultural societies in this county that I know of. A good, live horticultural society would no doubt be of great benefit in this county in increasing the interest in fruit growing, and would lead to better methods of culture and lead up to a higher appreciation of this noble vocation. More civic organizations and more discussion of these subjects at our Farmers' Institutes would awaken an interest in the matter of beautifying our homes by the raising of flowers and fruits, and through this awakening to the making of the waste places glad, of which there are many, both along public roads and on farms and about farmhouses.

There are two florists at Angola—Judge S. A. Powers, who is engaged in the business, and Mr. Ford Carpenter, living one and one-half miles out of the town, who is engaged in the business of raising flowers. His specialty is carnations, of which he has a great number. Both of these gentlemen have a genuine love for the business, no doubt, and are making a success of it. Would be glad if my knowledge of horticulture were such as to enable me to give you more information. Have written this very hastily, and if it will do you any good shall be gratified.

Yours very truly,

CHAS. M'CLUE.

Fremont, Ind., R. F. D. 4.

Van Buren Township, Lagrange County, December 2, 1904.

There is not much doing in this township along horticultural lines. Most farms have apple orchards, planted years ago for farm use, and which receive but little care from year to year. The reason for neglect is probably because the owners lack enterprise and genius to improve their holdings. Some years ago on hilly land in the west end of the township grapes and peaches were extensively planted, but now have gone back to nothing in neglect.

I am sorry to say no farmers' clubs or mutual improvement associations exist for the object of improving or beautifying any local natural conditions.

Louis Fetch, Shipshewana postoffice, has planted many peach trees and sells the product in local markets. William Benham has an acre of strawberries and has begun to plant peach trees for commercial purposes. White Pigeon postoffice. Otherwise very little or no interest is manifest in new plantings of fruits.

Commencing in 1882, I planted, mainly for farm use in view, and, incidentally, for what commercial advantage there might be in it, three acres of new orchard—40 varieties of apples, 10 of pears, 5 of peaches, 5 of plums, walnuts, chestnuts, blackberries, dewberries, raspberries, strawberries—and since have had a good succession of fruits. Droughty summers and hard winters have curtailed success quite a little, and my choicest varieties of grapes, plums and peaches have dwindled out. In the light of success and failure, I will commence next year to plant peach trees for what pleasure and profit there can be had in so doing. I believe it best for those who have the ability and inclination to set a good example of thrift in a neighborhood, to exhibit a well-kept orchard, garden and home grounds. And then the meeting of a good, live horticultural

society in such a vicinity will be an added incentive to further the cause of fine-tilled farms and well-kept homes.

I see by your letterhead you have nursery stock. What is it you have to distribute?

Respectfully,

L. E. FERGUSON.

White Pigeon, Mich.

Summarizing the reports received, with my own knowledge of the conditions of the district, we find that, though the farmers generally are not keeping up the original orchards to their former size, they are aiming to keep orchard enough to furnish fruit for their own needs. The interest in some portions of the district is gradually increasing. There is not very much attention paid to trimming, spraying and cultivating generally, owing to lack of time and proper apparatus for doing the work. The new plantings are usualy small, but of the newer and better varieties, and with fewer varieties, with an occasional specialist, whom we find in each of the counties, who are planting more extensively. In addition to the commercial orchardists mentioned in the letters already given, Mr. George Febles, Kendallville, Noble county, Indiana; H. E. Hoak, Ligonier, Noble county; Charles Harrah, Wolcottville, Noble county; Marion Garmire, Lagrange, Lagrange county; the Ellison Farm, Lagrange, Lagrange county, and myself, all have orchards of recent planting for commercial purposes.

With the proper care and conducted in a businesslike way it is a profitable investment. Suitable land in the several counties can be bought at from $40 to $100 per acre, according to location and improvements. There is some movement in the beautifying of school grounds, but not so much as there should be. Public roads in the district have been gradually improved, so that in many townships they are not excelled. There is a general advance in the care of home grounds, and many farms are now named, the name usually being symbolic of the natural location, scenery surrounding the homestead or of the specialty of the farm. The natural parks surrounding the hundreds of beautiful lakes of our district are being improved by the building of many beautiful and artistic cottages, with fine lawns and flower beds. We have two very lively and enthusiastic Horticultural Societies in the district, viz.: the Noble County Horticultural Society, of which J. C. Kimmell, Ligonier, is President, and J. W. Moorhouse, Albion, Secretary. This society has been organized seven years and has made a good growth both in interest and numbers, they having the largest membership of any society in the State. The Lagrange County Agricultural and Horticultural Society was organized four

years ago and we believe it has been of much practical benefit to the county. I believe the interest in Dekalb county is sufficient now for an active society there. All that is necessary is the organization, which, no doubt, will be perfected this winter, more such societies in the district and some good business men with capital to push the commercial orchard business.

REPORT OF THIRTEENTH DISTRICT.

There has been a steady advancement in horticultural interests in the Thirteenth District for a number of years, but there is still room for improvement. I do not know how this could be except through local societies. Taking our local society as an example, I think would be proof enough for me that if there was a horticultural society in every county throughout the State, horticulture would make great strides in the future. In speaking of our society—I mean the St. Joseph Horticultural Society—we have twelve meetings a year. We meet at the home of some member the last Saturday of each month. We take plenty to eat, stay all day and discuss matters pertaining to horticulture, have a literary program and a good time in general.

Farmers as a general thing are not well supplied with fruit gardens. They seem to think they have no time to look after one, and to judge from the average farm fruit garden it would look that way.

There are no large commercial orchards in the Thirteenth District, but several small ones that are paying the owners a good profit. There are good opportunities for the man with push and energy in this district, as we have a diversity of soil to choose from. Land can be bought reasonable that will grow all kinds of fruit adapted to our climate.

Speaking of the price of land, it is largely owing to the location. It can be bought within three or four miles of South Bend for from $60 to $100 per acre, and South Bend is one of the best markets in the world.

There is not much of a forward movement in regard to the beautifying of country school grounds. There has been something done along this line by the teachers and pupils on Arbor Day.

The public roads in a great many localities are sadly neglected, while in others there are fine gravel roads with shade trees on each side, presenting a beautiful appearance. The reason for this is that the localities having good roads are well supplied by nature with material for the making of roads, while the others are not so fortunate.

C. W. FOOTE,
Vice-President Thirteenth District.

REPORT OF THE LAGRANGE COUNTY AGRICULTURAL AND HORTICULTURAL SOCIETY.

The year which has just closed has been the most prosperous one in its history. Everything is harmonious. Financially, it is on a sound basis for another year's prosperity. The members are active and full of interest. It has held six regular meetings. The attendance has been good at all meetings. Programs have been more than full.

The President, Mr. J. C. Grossman, and the Secretary, Mrs. Lizzie C. Royer, have been present at every meeting. Every meeting has been reported by the Secretary to the four county papers. Every meeting has had a most excellent display of some kind. Premiums have been awarded to the sum of $11.80.

Held the June meeting jointly with Noble County Society at Island Park, Rome City, Noble county, Ind.; had 3,000 year books printed and distributed; sent two delegates to Indiana Horticultural Society—Mrs. D. B. Schaeffer and Miss Myrtie Vankirk; made a fruit exhibit at State Fair through Messrs. Leroy Eshelman, A. H. Bogue and J. C. Grossman, with the assistance of other members and the county at large and carried off the sweepstakes of $50 for best county exhibit, and other premiums and sale of fruits to the amount in all of $143.

Eighteen heads of families have been added to our membership list. Current expenses for the year, $334.82; on hand, $132.81.

At the December meeting the following officers were elected and committees appointed:

J. C. Grossman, President; A. H. Bogue, Vice-President; Mrs. Lizzie C. Royer, Secretary; Marion Garmire, Treasurer.

Executive Committee—J. W. Mills, Leroy Eshelman and Charles Smith.

Program Committee—Mrs. J. W. Mills, Mrs. A. H. Bogue, Mrs. J. Low, W. T. Clugston, E. C. Wemple and Charles Rowe.

Music Committee—Misses Edith Mills, Edith Eshelman, Huldah Sears, Veva Deal, Jessie Sherman, Bessie Appleman and Russell Smith.

Exhibiting Committee—L. L. Eshelman, A. H. Bogue, C. C. Smith, J. W. Low, Myrtle Vankirk, Mary Grossman and Sam Rowe.

Membership Committee for State Society—J. C. Grossman, J. W. Low, R. H. Newman, J. W. Mills, Mrs. D. B. Schaeffer and Rile C. Case.

Membership Committee for Local Society—Mrs. R. C. Case, Mrs. Charles Smith, George Roy, C. W. Sears and Mrs. O. A. Lampman.

MRS. LIZZIE C. ROYER,
Secretary.

REPORT OF THE WAYNE COUNTY AGRICULTURAL AND HORTICULTURAL SOCIETY FOR 1904.

BY WALTER S. RATLIFF, SECRETARY.

I herewith submit the annual report to your honorable body of the Wayne County Agricultural and Horticultural Society for the present year, with a resume of the agricultural and horticultural conditions in this section of Indiana.

This society has been holding its regular meetings for almost half a century, having organized in the city of Richmond in 1856, as the Richmond Horticultural Society, which name it maintained for several years, or until its reorganization.

The summer sessions are usually held at the residence of some of its members, or in some of the public parks that are to be found in various portions of the county. At such meetings, well-filled baskets are usually taken and the members and their friends spend the day socially, and in the consideration and comparison of the products of the field, orchard and garden that are to be found on the exhibition tables.

The annual festival dinner in February is unique and successful. From premium lists previously issued our lady members good-naturedly vie with one another in their competition for premiums on their culinary articles that are taken, which are afterwards placed on the large dinner tables, making the feast complete.

Officers for 1904: President, Oliver Burgess; Vice-President, Stephen Kuth; Secretary, Walter S. Ratliff; Treasurer, T. E. Kenworthy, and Corresponding Secretary, Hon. Joseph C. Ratliff.

Our organization, until within later years, has united with the Richmond Fair and Trotting Association, which has been holding county fairs east of this city, and it has had charge of the exhibits of seeds, grains, vegetables, fruits, flowers and culinary articles.

AGRICULTURE.

The average farmer has not been blessed as in former years in basket and in store, as a combination of circumstances hath otherwise decreed; but has been able to grow, harvest and dispose of his products without any very material losses.

Wheat—The past harvest was relatively a failure. The severe winter and spring, together with the attacks of the fly and isosomas rendered the crop practically worthless. Many fields were early sown to oats or plowed

for corn, and of those remaining but an occasional one, when cut and threshed, yielded grain that could have but a low rating. The recent sowing did poorly, owing to the protracted drouth following seeding time, and with serious ravages of the fly on the young plants, it has not entered the winter in a very flattering condition.

Corn—A large acreage. The late, wet spring retarded planting, followed by a long spell of dry weather. August showers greened up growing corn, and with late frosts, this maize made a late growth, ripening unevenly and slowly. At cribbing time the ears were largely soft and chaffy, with a yield of but 35 to 45 bushels to the acre.

Oats—An unusual crop of fine straw and grain. The season being most favorable, an occasional yield of 60 bushels to the acre was harvested.

Hay—Clover was heavy and saved in fine condition, but timothy was light and not very tall, but with a small acreage of the latter, the prices for hay have induced farmers to part with all they can handily spare.

Live Stock—Low-priced cattle, milch cows and hogs have had a depressing effect on feeders, and apparently fewer marketable animals have been offered. Later feeding has been advocated to utilize the unsound grain.

FRUITS.

The average fruit man has not been pleased with his year's work in his plantations and orchards. With a profusion of bloom, the prospects were flattering, but the later frequent showers interfered with successful spraying with poisonous solutions, and the late frosts lessened the prospects of the early blooming varieties. A very light consignment of nursery stock was planted this year.

Apples—Summer and early autumn varieties were not only abundant, but comparatively free from defects. Winter apples were fewer, wormy, of smaller size and damaged by the bitter rot in most of the orchards in this locality. So that at gathering time but few of our farmers had sufficient quantity of them to supply their needs.

Pears—With a few exceptions, the crop of pears equalled that of former years, with fruit of good size and excellent flavor. Notwithstanding the blight of the trees was bad in many orchards, but few serious losses have been noted from the entire loss of the trees. In this locality the summer and early autumn varieties appear to be mostly grown.

Plums—But few plum trees that were not well laden with this excellent fruit, and users of it have had a good opportunity of testing the merits of all varieties. The Bradshaw, Abundance, Burbank, Greengage

and Lombard are the greater favorites. Doubtless the home market has not for some time been as thoroughly and satisfactorily supplied as during the present year.

Peaches—An occasional locality in this section had trees that ripened a very fair crop of fruit, apparently regardless of protection from wintry winds. So uncertain has peach growing become that few orchards are being set for future bearing.

Cherries—The shortness in the cherry yield was doubtless due to the late frosts near blooming time. Early varieties were almost an entire failure, and those later sorts ripened rather poorly. Many trees have been recently set, embracing our standard varieties.

Quinces—But few quinces grew in this locality. The supply of this fruit has been inadequate for many years, which, with the ease of its propagation, should be an incentive to grow them more universally.

Grapes—Not overly plenty. The late frosts evidently are responsible for the shortness in the number of ripe bunches of this luscious fruit. Among the most popular kinds of later introduction is the Brighton, which should be grown in every door-yard.

Strawberries—The yield was only one-half of an average, and they not of the best. Too late freezes are said to have been the cause, the early settings of fruit stems being chilled. With the present demand for ripe strawberries, an opportunity is afforded for additional plantations for berry growing in this locality, at least.

Raspberries and Blackberries—Both almost entire failure, owing to the dry weather covering the period of summer when the canes needed moisture to mature the fruit. But few fruit men spend much time in the cultivation of these berries, owing to their uncertainty in growth and fruiting.

ORNITHOLOGY.

The interest manifested in the study of birds in recent years by the general public has been universal as well as problematic, judging from the number of Audubon Societies and similar organizations that are found in this and other States, and the introduction of the study of ornithology into schools and colleges. By the protection afforded through the influence of these organizations and favorable legislation, many of our more common birds have of late very materially increased in numbers. With this increase, their depredations in the orchard and field have kept apace, until the husbandmen have already, from the serious losses thus sustained in fruits and grain, begun to question the advisability of further protection.

INDIANA HORTICULTURE AT THE ST. LOUIS WORLD'S FAIR.

BY W. B. FLICK.

The Legislature, at the session held in 1903, enacted a law appropriating one hundred and fifty thousand dollars ($150,000) to bear the expense for making a display of the State's resources at the Louisiana Purchase Exposition, to be held at St. Louis, Mo., May 1 to December 1, 1904, and providing for the appointment of a Board of Commissioners, one from each Congressional District and two at large, to manage the same. Newton W. Gilbert, Fort Wayne; Henry W. Marshall, Lafayette; J. W. Cockrum, Oakland City; W. W. Wicks, Bloomington; W. W. Stevens, Salem; W. H. O'Brien, Lawrenceburg; Crawford Fairbanks, Terre Haute; D. W. Kinsey, New Castle; Nelson A. Gladding, Indianapolis; Frank C. Ball, Muncie; C. C. Shirley, Kokomo; Fremont Goodwine, Williamsport; Joseph B. Grass, Huntington; S. B. Fleming, Fort Wayne, and M. W. Mix, Mishawaka, were named by Governor Durbin to be the commissioners. At their first meeting Newton W. Gilbert was elected President, H. W. Marshall, Vice-President, and J. W. Cockrum, Secretary. Warder W. Stevens, Fremont Goodwine and W. H. O'Brien were appointed a Committee on Agriculture, Horticulture and Live Stock, and to manage these displays. This committee appointed a sub-committee entitled "Special Committee on Horticulture," composed of W. B. Flick, Lawrence; Sylvester Johnson, Irvington, and J. C. Grossman, Wolcottville, to make and manage the State's horticultural display at the World's Fair, and five thousand dollars ($5,000) was set apart for this purpose. The committee sent out circular letters to farmers, fruit-growers and horticulturists, soliciting exhibits and giving details and directions how to select, pick, pack and ship fruit. It was thought best and least expensive by the committee to store the fruit here at Indianapolis until the week immediately preceding the opening of the World's Fair, when it could be shipped at car-load rates, to St. Louis. There was procured in this way and by purchase about four hundred bushels of apples suitable for the tables, less than one half the quantity desired. The crop of both apples and pears was very scanty and of poor quality throughout most of the State this year, which caused this shortage in stored stock. The committee solicited bids at St. Louis for the construction of the booths, tables, etc., but rejected them all on account of their exorbitant prices, the lowest of which was fifteen hundred dollars. The contract was let to an Irvington contractor, at a saving of nearly one thousand dollars, whose work was conceded to be the most complete

and best finished in Horticultural Hall. Green china plates were made especially for this fair, of which Indiana ordered 90 dozen, but received only 45 dozen.

Indiana was one among the three or four states that were ready for the opening day, May 1. She received 100 per cent. on opening, and had her tables full of apples and pears equal to the best there and superior to most.

The fruit had come out of cold storage in fine condition, some of it even with a slight bloom on it, as if just picked from the trees. The fruit was not rubbed at any time to brighten it up, but was put on the tables with the "dew on." This was thought best by the committee and was also in accordance with the rules of the L. P. E. A most excellent display was kept on the tables which run down slightly through part of August and September, when the cold storage fruit was about exhausted and the new crop was not available. As soon as the new crop could be drawn on, the display assumed, in quality, a superlative degree, and in quantity no inferior rank. Indiana showed a wide range of varieties of well-grown apples, her exhibit having about two hundred varieties. She made a reputation for well grown, well flavored and highly colored apples for commercial purposes. A few of the poorer quality of commercial apples were on the tables, but not enough to attract attention, while most all the display of some states were of these varieties. The display of watermelons from Knox County, which were not classed in the Horticultural Department, were the largest and finest at the fair, and it is a pity that they could not be judged for prizes.

On account of the exorbitant charges for transportation, expressage and privileges, which threatened to absorb all the appropriation for the horticultural display, the commission could not, like other states, engage a superintendent to stay at St. Louis and have charge of the exhibit all the time, but concluded to let different horticulturists of the State take charge at different times. Among those who had charge were Sylvester Johnson, W. B. Flick, J. C. Grossman, Geo. P. Campbell, Mr. Millhous, Mrs. W. W. Stevens, John Barnett, Evan Davis, Amos Garretson, Chas. N. Lindley, Jas. M. Zion, E. A. Robison, H. W. Henry, H. H. Swaim, A. H. Bogue, A. W. Shoemaker, Otto Zink, H. M. Stout, John Tilson, R. L. Beck, Fred C. Dickson and Leon Arbuckle.

There were about two hundred exhibitors in all (a part of the papers were lost, and the exact figures are not known).

Among those who deserve special mention as making large and excellent displays, are Thos. T. Newby, of Carthage; Jas. M. Zion, of Clarks Hill, and Joe A. Burton, of Mitchell, who each were awarded a gold medal for their displays. (For others who made fine displays and carried off honors, see the list of awards hereunto appended.)

There were used and put on the tables, altogether, about fifteen thousand (15,000) plates of fruit, nuts, etc., and about 900 bushels were used for this purpose. On an average, a plate of fruit remained on the tables about ten days or two weeks, then was replaced with fresh specimens.

Indiana, seemingly, had more visitors in Horticultural Hall than any other state, and although not keeping a registry book all the time, over seven thousand Hoosier visitors wrote their names in our book. All were made welcome and seemed to enjoy the hospitality. Indiana's sons and daughters, especially, were pleased to find their native state so nicely and cosily fixed for the home people to rest.

Of the amount ($5,000) set apart for this display the committee turned back an unexpended balance of one thousand dollars* ($1,000).

The members of the State Horticultural Society deserve the thanks of the State for the honors won by Indiana's horticultural display, as nearly all the exhibitors were members of this society, and the managers and attendants were also members and officers.

In all, there were one hundred and twenty-three medals awarded to this display—four gold, twenty-eight silver and ninety-two bronze medals, as follows:

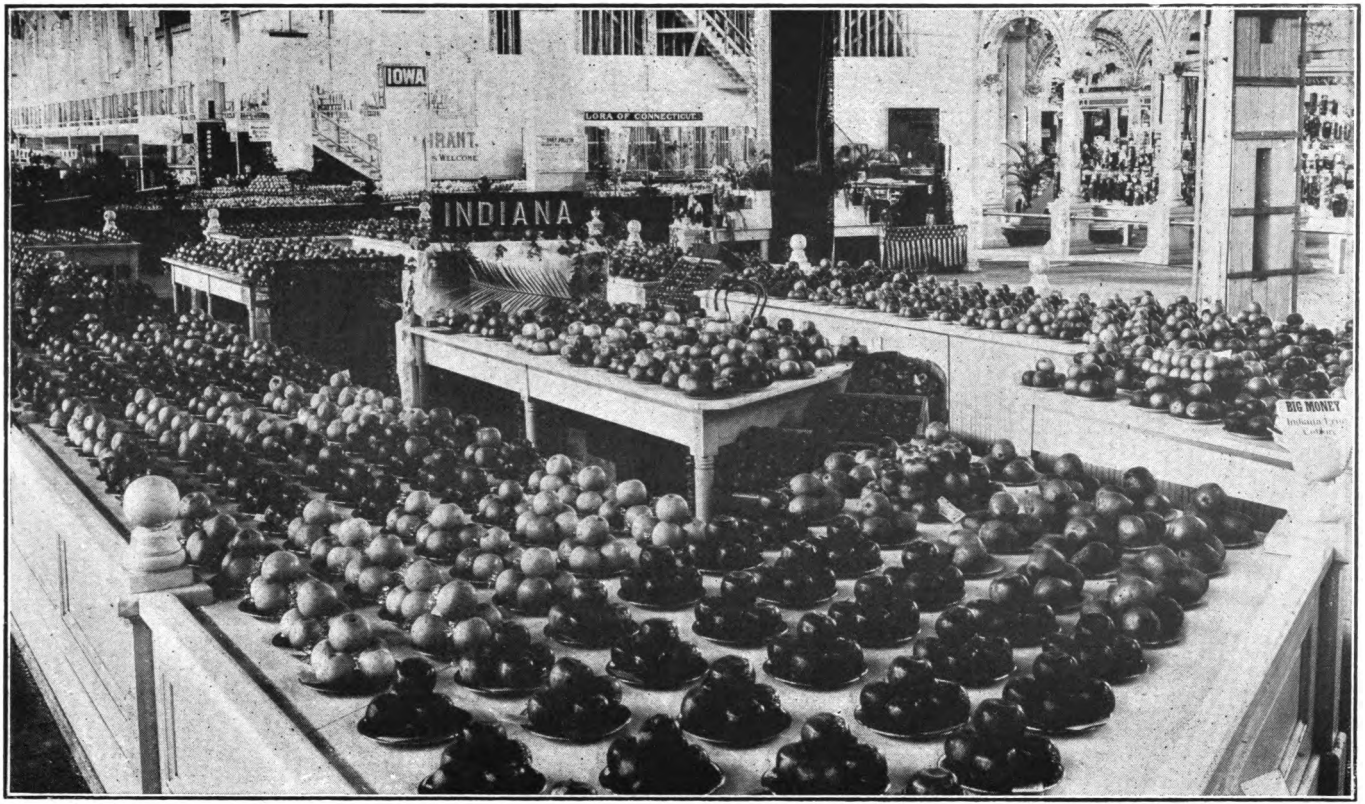
The following exhibitors were awarded medals as follows:

State of Indiana for fruit, nuts, etc.....Gold medal.
Joe A. Burton, Mitchell, apples and pears.....Gold medal.
Thos. C. Newby, Carthage, fruit.....Gold medal.
Jas. M. Zion, Clarks Hill, fruit.....Gold medal.

SILVER MEDALS.

St. Joseph Co. Hort. Society, South Bend, apples.....Silver medal.
L. L. Athey, Madison, dewberries.....Silver medal.
M. C. Beard, Edwardsville, plums.....Silver medal.
John Bellville, Grandview, apples.....Silver medal.
Geo. W. Burton, Orleans, apples.....Silver medal.
John J. Charles, Lagrange, apples.....Silver medal.
Henry Cornelius, Wolcottville, apples.....Silver medal.
Henry Cramer, Wolcottville, apples.....Silver medal.
Mrs. B. A. Davis, Laporte, fruit.....Silver medal.
W. F. DeVilbiss, Fort Wayne, fruit.....Silver medal.
Mrs. Lucy Farnaman, South Bend, apples.....Silver medal.
W. B. Flick, Lawrence, fruit.....Silver medal.
Amos Garretson, Pendleton, raspberries.....Silver medal.
J. C. Grossman, Wolcottville, fruit.....Silver medal.
Chas. Harrah, Wolcottville, pears and apples.....Silver medal.

*Not exact figures.



INDIANA FRUIT EXHIBIT AT THE LOUISIANA PURCHASE EXPOSITION, 1904.

Samuel H. Hazelett, Greencastle, apples.....Silver medal.
H. W. Henry, Laporte, fruit.....Silver medal.
J. S. Henwood, Centerville, apples.....Silver medal.
Chris King, Rushville, plums and apples.....Silver medal.
Elam Osborn, Economy, apples.....Silver medal.
W. J. Ritterskamp, Princeton, apples and peaches.....Silver medal.
Reed & Fielding, Glenwood, apples.....Silver medal.
H. H. Swaim, South Bend, peaches and grapes.....Silver medal.
J. W. Todd, Lagrange, apples.....Silver medal.
Chas. A. Thurston, St. Joe, apples.....Silver medal.
Barney Waldron, Wolcottville, apples.....Silver medal.
S. T. S. Williams, Knightstown, apples.....Silver medal.
Geo. Wright, Mitchell, apples.....Silver medal.

BRONZE MEDALS.

Harrison County Agricultural and Horticultural Society, Corydon, fruit .....Bronze medal.
Lagrange County Horticultural Society, Lagrange, fruit....Bronze medal.
Marion County Agricultural and Horticultural Society, Indianapolis, nuts .....Bronze medal.
Noble County Horticultural Society, Albion, apples.....Bronze medal.
Albertson & Hobbs, Bridgeport, fruit.....Bronze medal.
Wm. H. Andrews, Wolcottville, apples and plums.....Bronze medal.
N. Augustine, South Bend, apples.....Bronze medal.
S. L. Barnes, Richmond, apples.....Bronze medal.
R. L. Beck, Connersville, apples and peaches.....Bronze medal.
J. C. Bieler, New Albany, apples and peaches.....Bronze medal.
Blue Bros., Indianapolis, fruit.....Bronze medal.
A. H. Bogue, Lagrange, apples.....Bronze medal.
C. P. Bradley, South Bend, apples.....Bronze medal.
S. L. Bricker, Shipshewana, apples.....Bronze medal.
A. W. Brewer, Corydon, fruit.....Bronze medal.
W. H. Bruce, Bartholomew County, nuts.....Bronze medal.
Jno. S. Burgess, Moberly, fruit.....Bronze medal.
Geo. P. Campbell, Bloomington, peaches and plums.....Bronze medal.
Jno. V. Chamberlain, Bloomington, apples and pawpaws...Bronze medal.
Wm. Chrysler, Lagrange, apples.....Bronze medal.
Corydon Fair Association, Corydon, apples and pears.....Bronze medal.
County Farm, Clinton County, apples.....Bronze medal.
C. W. Cummings & Co., Indianapolis, apples.....Bronze medal.
Deolen Dougherty, Cambridge City, apples.....Bronze medal.
Ed Eaton, Lagrange, apples.....Bronze medal.

Mrs. Gertrude Eaton, Shipshewana, apples.....Bronze medal.
L. E. Furguson, White Pigeon, apples.....Bronze medal.
Jos. Fields, Lagrange, apples.....Bronze medal.
Marion Garmire, Lagrange, apples.....Bronze medal.
Peter Gouzon, South Bend, pears.....Bronze medal.
F. C. Grossman, Lagrange, apples.....Bronze medal.
Miss Mary Grossman, Wolcottville, fruit.....Bronze medal.
Chas. Haines, Richmond, apples.....Bronze medal.
H. E. Hain, Granger, fruit.....Bronze medal.
Oscar Hardman, Orleans, apples.....Bronze medal.
A. T. Harmon, Orleans, crab apples.....Bronze medal.
J. J. Hinshaw, Evansville, peaches.....Bronze medal.
W. J. Hefner, Topeka, apples.....Bronze medal.
John Hitz, Indianapolis, apples.....Bronze medal.
Doc. Huser, Grandview, apples.....Bronze medal.
W. G. Huston, Rome City, plums.....Bronze medal.
J. C. Jeffreys, Grandview, apples.....Bronze medal.
Mrs. Mollie Kaleger, Wolcottville, pears and plums.....Bronze medal.
J. C. Kimmell, Kimmell, apples.....Bronze medal.
Wm. Klinkner, South Bend, apples.....Bronze medal.
Ben. J. Knaub, North Vernon, apples and pears.....Bronze medal.
W. H. Lafuse, Liberty, apples.....Bronze medal.
O. A. Lampman, Topeka, apples.....Bronze medal.
La Launde Jardin Experiment Station, Clarks Hill, apples.Bronze medal.
G. A. Latta, Lagrange, apples.....Bronze medal.
J. W. Low, Topeka, apples and plums.....Bronze medal.
D. F. Maish, Frankfort, fruit.....Bronze medal.
Sister M. Margaret, Rome City, apples.....Bronze medal.
Chas. McGloran, Sunshine, fruit .....Bronze medal.
Elijah McMahan, Richmond, apples.....Bronze medal.
Melville Hiller, Corydon, apples.....Bronze medal.
C. R. Mosby, Grandview, apples.....Bronze medal.
E. L. Mounts, Owensville, pears.....Bronze medal.
R. H. Neuman, Shipshewana, apples.....Bronze medal.
S. R. Peters, Craig, apples.....Bronze medal.
J. W. Philips, Princeton, apples.....Bronze medal.
Frank Potter, Valley City, apples and pears.....Bronze medal.
Purdue University, Lafayette, apples.....Bronze medal.
W. B. Robinson, Vincennes, apples.....Bronze medal.
G. T. Robinson, Greenwood, apples.....Bronze medal.
Samuel Rowe, Lagrange, apples .....Bronze medal.
Chas. Roger, Valentine, pears.....Bronze medal.

G. M. Roy, Wolcottville, pears and apples.....Bronze medal.
D. B. Schaffer, Lima, apples.....Bronze medal.
A. W. Shoemaker, Daleville, fruit.....Bronze medal.
Elmer Snyder, Lagrange, apples.....Bronze medal.
E. H. Spencer, Mt. Vernon, pears.....Bronze medal.
T. L. Stevenson, Wolcottville, apples.....Bronze medal.
J. A. Stevens, Liberty, apples.....Bronze medal.
Stokes & Thomas, Sunshine, fruit.....Bronze medal.
D. L. Sowers, Rome City, apples.....Bronze medal.
R. L. Thompson, Topeka, apples.....Bronze medal.
Jas. Troop, Lafayette, apples.....Bronze medal.
Elmer G. Tufts, Aurora, fruit.....Bronze medal.
A. J. Turley, Orleans, apples.....Bronze medal.
J. W. Turton, Grandview, apples.....Bronze medal.
H. W. Vannice, Danville, apples.....Bronze medal.
H. Wehry, North Vernon, apples and plums.....Bronze medal.
Isaac Whiteley & Son, Cambridge City, apples.....Bronze medal.
G. T. Wright, Orleans, apples.....Bronze medal.
H. A. Yeager, Princeton, apples and pears.....Bronze medal.
Ralph Zion, Clarks Hill, pears.....Bronze medal.
Ruby Zion, Clarks Hill, apples.....Bronze medal.

REPORT

OF THE

District Horticultural Institute

Held under the Auspices of Purdue School of Agriculture, in the Christian Church, Kendallville, Tuesday and Wednesday, August 30-31, 1904.

TUESDAY MORNING SESSION.

President Latta called the meeting to order.

Invocation by Rev. C. H. Bass, Pastor of the Christian Church of Kendallville, Ind.

Rev. H. C. Bass: Our dear heavenly Father, we thank thee that it is meet and proper at all times for us to call upon thy name, and especially at this time we feel that we may call upon thee and ask thy blessings on this meeting. Thou hast promised to bless those who walk the way on this earth according to thy will, and especially hast thou promised to bless us by sending sunshine and rain, and thou hast promised us a seed time, and a harvest, and we pray for these blessings as we meet here together today. Bless those who labor and earn their bread by the sweat of their brow, and so fulfill the physical law of their being in the world, and so shall our cups be filled and we be strengthened and thy name glorified. Bless those who shall speak in this assembly during the coming days; lead us unto a higher, more spiritual, and more fruitful way of life, and at last bring us to thyself, and thine shall be the glory forever. Amen.

President Latta: We will now be favored by a greeting by J. S. Conlogue, of Kendallville.

J. S. Conlogue: Mr. Chairman, Ladies and Gentlemen—I am very glad this morning that Rev. Dickinson is out of town, as it falls upon me to deliver the address of welcome, and you all know I can do it very gracefully. I am also very glad to know that I only had a moment's notice, for that too will in a measure excuse me if my address is some-

what informal. I am very glad that this Association saw fit to come to our beautiful little city to honor us with their presence. We have very good talent here, and we hope that this will be one of the best meetings ever held in the State. We have been saying this for some time. We haven't many here at this morning session, but there will be more later on. We have been telling the people for some time what a meeting we were going to have, and I am sure that the people who do not attend will miss a great deal. Without discussing the matter further, I will say that the city feels highly honored on account of this Institute being held here. We are glad you came and hope you will stay a long time, and when you go away we hope you will say good things about us whether you think them or not.

President Latta: I see I am on the program for a response. I will give this response, then I will turn the meeting over to you. This greeting was short and sweet. I will try to make mine as short; as to the sweetness I will not speak. I really want to say at the opening that meetings of this kind are for two or three different purposes. One of course is to get information along particular lines. Another is to get the broader views that will come from a meeting of this kind. The individual who lives within the plane of his own observation lives in a very narrow plane. We must enlarge our range, and enlarge our knowledge by calling upon one another in these meetings. They afford just this kind of an opportunity. Again, these meetings serve to insure us most earnest effort and most successful work. I trust that we will realize all of these things in this meeting. They will give us practical, helpful information, enlarge our views of life, and our relations to life in several lines of work, and we will go out stronger in the work we have to do. These are the prime ends. Of course we will form pleasant acquaintances during these two days, which we trust will last through life. We will be better for meeting here, and that will be one of the good things—to develop and foster the spirit of fellowship. As a class, I think it may be said that farmers do not get together enough. They are isolated. At the present time they do not get in close touch with each other like business men do. I have thought that if we were more chummy it would be better for us. I hope that this spirit will crop out here in these meetings, and will be the inviting feature of this meeting. We must be social, friendly, helpful; come with the purpose of getting and giving, one as well as the other. We want to make our contribution. We do not want to be sponges, but accomplish our part. I said to a very bright young fellow once who did not wish to join our club, but rather sponge, that it was not a good thing to be a sponge, and always be absorbing things, for he would find that he would

have to be squeezed. Now that is one good thing; that under pressure a sponge will give out something, and the one that has nothing fails to give out anything. So there must be that response on your part of active thought. And so I feel that we should enliven our meeting by questions, objections, suggestions, or any way that will be helpful. I am forgetting myself. We were to have a short time to devote to the exercises for the morning. We have two strong fellows on the program this morning. The Possibilities of Fruit Culture in Northern Indiana. I think our people realize what these possibilities are. I hope we will give our views on this subject—such views as will strengthen our belief in the position of fruit culture in Northern Indiana. We have men who realize this responsibility. We will take the rest of the morning for the discussion of these two topics. It is my pleasure to introduce to you Mr. H. H. Swaim, of South Bend, who will speak on this subject.

H. H. Swaim: Benjamin Franklin said that he could tell all he knew on any subject in five minutes, and I think perhaps it is particularly fortunate for me that the time is short. I do not pretend to be able to compete with Franklin in knowledge, and I assure you it will not take very long to tell all I know on the subject of Fruit Possibilities in Northern Indiana. When we speak of possibilities a wide field opens before us. In this day of progress and invention, we dare not call the wildest dreams of man impossible. In the mechanical world we have many inventions and appliances in everyday use that fifty years ago were unthought of, or if suggested, were considered wholly visionary. In Horticulture many of our delicious fruits and beautiful flowers are the product of the last half century. Man has brought the apple to its present high standard of excellence from the sour wild crab; our juicy, luscious pears had their origin in the puckery seedling. Men yet living can trace each step in the development of the strawberry. We have learned now to control insect pests and plant diseases, and each recurring season brings new fruits and improved methods; so that when we speak of the possibilities we open a wide field for the imagination. But rather than indulge in any flights of fancy, let us take a look at the conditions and prospects which confront us as fruit growers of Northern Indiana.

SOIL AND ELEVATION.

We have an elevation of from seven hundred to one thousand feet above sea level, which precludes all danger from floods. The land is sufficiently rolling to give good air drainage and in some portions is quite broken and hilly, sometimes rising abruptly to a height of one hundred and fifty feet or more above the surrounding country. The land formation

is what geologists call drift, that is, soil that was carried and deposited here by the advance of the ice fields during the glacial period. As a result of this formation we have a great variation in the soils, ranging all the way from the muck of the marshes and lowlands to heavy clay loam. It is not uncommon to find muck lands, sand and gravel loam and heavy clay loam upon the same farm. This makes it possible to grow a great variety of fruits and give each a soil to which it is adapted and have all under your personal supervision. This combining a variety of soils, with suitable locations and elevations, makes Northern Indiana an ideal locality for all fruits which can be grown in this latitude.

Now in regard to the apple. This is the natural home of the apple. Northern Indiana apples combine as many good points as those of any other section of the Union, and can be grown successfully over the entire region, except perhaps the prairie lands of the extreme western portion. While this is true, it is also a fact that only a small per cent. of the land suitable for apple growing is being utilized for that purpose, and our cities are compelled to buy hundreds of car loads of apples annually from the fruit growers of other states, while our farmers continue to grow wheat at a loss upon land much better adapted to growing fruit.

There are, however, a few wide-awake, energetic men who are turning their attention to fruit growing, and their number is increasing each year. Fruit farms of from ten to eighty acres are not unusual, and their success is inducing others to make the venture. I called upon a young man of about twenty-five a short time ago, who has a fine young orchard of fifteen acres just coming into bearing, every tree of which he assured me he propagated and grew himself—a record which but few men of his age can show, and one of which he may well be proud.

Pears succeed equally as well as apples in this region, and are equally profitable. I have the care of a pear orchard that was planted forty years ago, which is still yielding profitable crops of fruit. Another orchard planted eleven years ago is now carrying its seventh crop of fruit, not having missed a crop in seven years. Last year when pears came the nearest being a failure they have for many years, this orchard bore a full crop, some of the trees yielding seven and one-half bushels of first-class fruit, which sold in my local market at one dollar and a quarter per bushel, wholesale. In fact all the tree fruits attain their highest perfection here and, with the possible exception of peaches, can be profitably grown. Do not understand me that peaches cannot be grown here, for we do grow fine ones, but climatic conditions are such as to make them too uncertain to be valuable as a commercial crop.

The grape is another fruit to which our hills are naturally adapted, and there are thousands of acres of hill-land which could be profitably

planted to this delicious and health-giving fruit. It yields abundantly, seven tons per acre having been shown in my home county, St. Joseph, and clusters weighing two pounds each have been produced.

Berries and all small fruits succeed equally as well as the tree fruits, and can be grown in great variety and of a quality that is unsurpassed.

We have in the cities of Northern Indiana excellent markets for fruit, each year more and more people learning the value of a fruit diet, thus increasing the demand which we are not able to supply. The network of railroads which cover this region gives us the best of shipping facilities and access to all the large cities of the country.

The advent of the system of preserving fruit by cold storage is a boon to the fruit grower. By its use we can avoid the danger of glutted markets at harvest time and by distributing sales through a longer season can obtain better average prices. This alone opens up great possibilities for the fruit grower of the future, and its use is fast becoming a necessity in all fruit-growing centers.

While our fruit growers have accomplished much in the way of the production of fine fruits and generous yields, we are still far from the limit. There is an abundance of room for improvement. By better methods of culture we may increase the yield and quality of our fruit. Experimenters by crossing and by hybridizing are constantly giving us new varieties. These do not always prove superior to those we already have, but are the means by which we may expect to finally reach our ideals, and much honor is due to those who are making this their life work. We are constantly learning better and more efficient methods of fighting the insect pests and controlling the diseases which affect our trees and plants, so we may confidently expect the future to bring forth greater results than anything that has been accomplished in the past.

The one thing most needful to reach our ideal and place Northern Indiana where it belongs among the foremost fruit-producing sections of this country is more of the right kind of men. Young men of pluck and energy who have been educated for this line of work can find here an inviting and hospitable field for their labors, and by their example bring others to a realization of the grand opportunities which lie at their door.

Prof. Latta: Owing to the lateness of the hour we will omit the discussion at this point. Is this satisfactory? We would like to give Mr. Van Deman more time for the discussion of this important talk. Mr. Van Deman, a veteran fruit-grower of New York, will discuss before you how these possibilities discussed by Mr. Swaim may be realized, as it is not your desire to postpone this discussion until afternoon.

H. E. Van Deman, Apulia, New York: Mr. Chairman, Ladies and Gentlemen—I have been stopping in New York for a short time. My home is now in Washington, but I feel at home all over the country. I was born and reared in your neighboring state of Ohio, and conditions that we meet here are very familiar to me, and have been from childhood. I have always been very much pleased in my travels with the condition of things in Northern Indiana and the northern part of Ohio. I know that nature has done a great deal for that part of the country. Your soil is low, is rich, etc., and while you have a climate that is somewhat rigorous at times, as has been suggested by the man who has just spoken, still the climate is not so rigorous but that almost all orchard fruits, small fruits and grapes may be grown with great success right here and all over this part of the State, and neighboring states. You hear folks say, "Yes, but it takes a lot of hard work, backed up by good sense to get good fruit." This is true, but the possibilities that nature has offered you will be of no avail whatever unless the fruits are planted and then taken care of. The whole thing is bound up in the statement that you must plant and then take care of the fruit. Now this brings the responsibility direct to you, for nature has done her part. Now, then, will we do our part? If we are to realize the possibilities that nature has offered us we must do our part. There are not many in this room, but I wonder how many of the few that are in this room have all the fruit that they can use from the time that berries begin to ripen until the last winter apples are gone. I wonder how many have taken steps to provide themselves and their families with an abundance of good fruit the year through. We can do it. Will we do it? Do we do it? I am sorry to say that I don't believe that all here do it. I will leave this question with you and you can answer it each one for himself or herself. But I have never found a neighborhood yet where the people have half provided themselves with the fruits that they might have had and could have used, and if I should ask the question "Why?" I don't believe anybody could tell. Perhaps it is not laziness, but perhaps that has something to do with it, but it is a sort of inattention to business, inattention to our duty that we owe to ourselves and to each other, and if I should leave any impression upon this audience it would be this fact. I wish you would carry this out. Begin next spring, if you don't begin sooner, to have all kinds of fruit. It will pay you in dollars and cents. We may love hog and hominy, but you could live a great deal better if you will have an abundance of fruit for your diet. What is nicer when springtime comes than an abundance of good strawberries, and there is not a piece of land in all this country that will not raise good berries. Wherever you can grow corn you can grow strawberries. You can grow all kinds of berries—blackberries, rasp-

berries, and all the catalogue of berries that are cultivated by the nurseryman, and there is no good reasonable excuse why anyone of you, even though you live on a town lot, may not have a little piece of ground on which you can plant fruit. We have quite a strawberry patch in our back yard, and when we lived on the farm we had all we could use, and we now feel the privation. There is a great satisfaction in eating fruit that you have grown yourself. There are lots of things money will not buy. It cannot buy the privilege to go out and pick berries. I want to be right up to date. Even when you live in town lots you can have a small garden at your command. Now it is surprising how much can be grown on a small space of ground. Even on a space no larger than this room we might grow half as many strawberries as a family would use, a few grapes, and have a few apple trees or pear trees. This could be done in a space not larger than this room. And haven't every one of you that much or more space to spare? How many farmers are there that never sit down to home-grown berries? Very likely there are some right here. Some say it is cheaper to buy. Yes, but you don't buy them as a rule. This is only an excuse when you say that it is cheaper to buy than to raise them. It is not true in the first place, and in the next you don't do it. If you raise them at home you will have them, and as I said before, that is one of the points that I wish to impress upon each member. Make use of these possibilities by planting at once, and do not put it off until some more favorable opportunity, for that opportunity very rarely comes. It is like an opportunity in business. You will have to make the opportunity yourself. If you don't do it no one else will make the opportunity for you, and it will not be done.

Now, as to orchard fruits. A great many people make a mistake when they choose the trees for their orchards. In the first place I may say that every farmer should have what would be properly called a family orchard. A commercial orchard is all right, but above all, have a family orchard. A family orchard is an orchard which will produce different varieties of fruit, from the earliest to the latest, without a gap in time, or a time when there will be no fruit at all. Now this is where skill and knowledge comes in. You should have a knowledge of when certain fruits will ripen, whether or not they will be a success in your particular locality, etc. Now we have a good guide in the nurserymen's catalogue, for I want to say to you that nurserymen are about the most philanthropic and most useful people in the whole country. They are doing a world of good wherever they live, and they are doing the country, as a whole, good. They give advice as to what, when and how to plant and take care of fruit. Some of these catalogues are really excellent books on fruit growing, and they will tell you, if you do not know by experience, how to do

things. If you will pay more attention to what is said in these little catalogues you will learn a great deal and be very much profited. There are books and pamphlets on fruits laid right before our eyes, and yet we are so blind we pay no attention and make a kind of a guess. I have known apple orchards planted out—and I'll venture there are some here—where there were five or six or ten Red Astrachans, and a Maiden Blush, and then there will be a skip of about two or three weeks when there won't be any apples at all. And the next thing is a winter apple that will ripen about Christmas. Now the intelligent way to begin is to begin with the earliest, say for instance the Yellow Transparent, of which have one or two trees, or the Summer Rose, which is another very early apple. And three or four trees of the Red Astrachan. That would be an extreme number. It would be more probably than you would use. But why not have sense and wit enough to plant more than you can use yourself. A little later plant those like the Lowell, Jefferson and Hawley and Maiden's Blush, if you like it. I don't, because I think we have better varieties. I would be willing to throw away every variety we have if we could get something better. Let's get the best there is, and if we have the best there is there is nothing more to do for the men, women and children who grow them. The man who tills the soil should live on the cream of the earth, and he may if he will. Take the possibilities and work out how you can do. The man who tills the soil should be the best fed man on earth. When people in the city buy things they do not know where they came from. A fish caught out of the water and put in the frying pan is lots better than one that has been salted down. You meet the greatest privation when you go to the city. I have experienced it and my wife talks about it constantly. You get things from market that ought to be fresh out of the ground or cut off the trees or bushes, but they are not always so.

If there is a will there is a way. The way is open for every man, woman and child to be successful in the raising of fruit. There is no excuse. Some of the neighbors like sweet apples. They have Sweet Junes planted. A little later Golden Sweet, which will be ripening this month and on into September is good. A little later you will have the Randel, a sweet apple of the highest character.

The peach is not so well adapted to this region. There are some localities where it does very well, but generally it is a failure in Northern Indiana, compared with the peach-growing parts of the country, such as the peach regions in Michigan, Georgia, Texas, Maryland, Connecticut, and other like regions where they grow by the thousands of acres. Of course you can have a few at home.

This is a good region for cherries and plums. You may have a num-

ber of varieties of these and there is no excuse for not having them. The quince can also be grown here.

We might leave the orchard fruits now and go on to the grapes and see what a large list of fine grapes we have. We have many different varieties.

I am proud to tell you that my great grandfather was one of the foremost fruit growers of his time. They came from Pennsylvania in the latter part of the century, about 1796. He grafted seedlings apple trees, and he had to take all kinds of chances as to what kind of a variety they would produce. We do not have to contend with such things as that now. We have lists so long that they are cumbersome. We have so many in size, color, form, flavor, that we can choose to suit anybody and everybody. It is simply wonderful even in this immediate locality what one can do, and that is the question that most concerns you right here. And that is "What can we do right here?" That is what we want to think about and what we want to work out. I presume that this will come up at other times of this discussion, and perhaps those present may have something to say then. I will say for your encouragement that fruit growing is the most estimable occupation in the world. It is the poetry of agriculture. Northern Indiana is an excellent fruit region and you ought to make use of these great possibilities, and I hope you will not forget them.

Prof. Latta: We still have some time for questions. Is it practical for the farmer who grows fruits for family use—for the use of his family only—to employ methods that will insure high class fruit free from blights, or is that only practical with the commercial fruit grower?

Mr. Van Deman: I say that it is. Anything that is worth doing at all is worth doing right, and there is no use leaving all methods of fruit culture to the commercial grower. He can have the appliances and use them just as cheaply in proportion as the commercial man can. Certainly he can, just as easy as a man can use a big machine to spray a hundred acres.

Prof. Latta: Is that important?

Mr. Van Deman: Yes, it is certainly. The person who does not make use of the modern methods of fruit culture might just as well quit, or he had better never begin. If he sits down and folds his hands idly the worms will spoil his fruit. It is entirely practical to use the modern spraying apparatus if you are spraying for the family, and one can do it just as intelligently as the man who does it for the dollars and cents that are in it. I say "yes."

Prof. F. Roth, Ann Arbor, Michigan: We have been talking mostly about the commercial side of the market. Now two-thirds of the people of the United States are farmers, and I have wondered why they don't do something for themselves. Why shouldn't we provide for the feeding of the two-thirds (the farmers) and let the other one-third take care of themselves? Here is a question I would like to ask. Isn't it possible to select such fruit, and to carry on fruit culture in such a simple way that even the farmer with very small means, and with a small amount of intelligence can get along and still do considerably better than he is doing at the present time?

Mr. Van Deman: He certainly could. He can economize in time by a little thought. A simple idea followed out will save much time and worry, and that is to plant all of your vegetables and fruit plants in straight, long rows so that they can be cultivated by a horse. If you do not have enough of one kind to make a row, plant several different kinds in a row. This hoe gardening is a nuisance. Plant your things in straight rows and cultivate them with a horse. Plow your strawberries the same as anything else. Plant your garden the same as a cornfield, and attend it with a plow and double cultivator.

Mr. DeVilbiss: I have one question that I would like to ask. A farmer has much leisure time in the winter, but not much time in the summer. I have had experience in the last two or three years, and it seems to me that the time is not far distant when we should spray more in the winter and kill the spores in our orchards, and save the fruit from scabbing in the summer time. I believe the black rot can be killed by spraying in the winter time. I believe that the pores of the fungus that causes scab which appears on the apple can be to a great degree fought in the winter time. Is this not true?

Mr. Van Deman: Well, I suppose that question is directed to me. I will say, Mr. Chairman, that I do not profess to be an expert on fungous diseases. We have a gentleman from Michigan who can better answer that. There is a great deal that can be done to kill spores. When you kill the spores you cut off a large part of the trouble by nipping it in the bud.

Prof. Latta: I suppose this will come up in tomorrow's program. It is one of the conditions of success. That is sufficient for this time. Are there any more questions?

Prof. W. P. Hedrick: In talking with other people and with older people they almost invariably tell us that if conditions were as they used

to be they would be glad to plant fruit trees, but now conditions have changed, and that it doesn't pay as it used to. I feel sure that some in this audience may feel the same way. I should like to have Mr. Van Deman to answer this question. Have conditions changed and how can we meet the changed conditions?

Mr. DeVilbiss: I do not think that conditions have changed. It seems to me that we can grow better fruit than we ever could. Too many are like the man that says he hasn't time to plant strawberries. He has the time but he won't do it. He ought to do it. When a man says he hasn't time he tells what is not true. There was a man came to my house one day while I was planting out my strawberry patch. This man never raised any strawberries, and I don't believe he ever bought any. He talked and talked away to me, and finally I asked him why he didn't raise a patch of his own, and he replied that he didn't have time to plant any. I in a jokingly sort of way told him that wasn't true for he had talked to me long enough to have a patch of berries planted, and had bothered me in the bargain. He admitted that he believed that was true, and started off home to plant a patch. We must urge it on these people.

Rev. W. H. Talbert, Albion, Ind.: I dislike very much to differ with these people here who have had so much experience, but I fear I will have to. It has been about sixty-two years since I was a boy. I go back to my father's home to the old trees that were bending with fruit. and realize that many conditions have changed since then. There were then no such things as these pests that destroy the fruit now. I can not remember of any such a thing. Our apples were perfect. I used to take an apple or two with me and keep them under the covers and eat them after I had gone to bed. We had the finest kind of fruit. We didn't have the worms and scabs. And to my mind conditions have changed, but I believe that the man with energy and brains, not very many, not necessarily an expert, can grow fine fruit, but it will take more effort and more energy than it did fifty years ago.

Prof. Hedrick: I think conditions have changed to a certain extent. I think it is harder to grow fruit, and I only asked the question hoping that Mr. Van Deman would answer it, and would state that it requires more effort and more skill and harder work to grow fruit now than it formerly did. We must meet the new conditions that have come to the fruit grower within the last quarter of a century.

Mr. Fields: My observation in the West—in the State of Washington—is this. We have some very fine fruit there, but this same question came up there with those fruit growers, and they made it a strong

point that they had to fight a harder battle to raise fruit now than formerly. I simply make this remark.

Mr. Van Deman: I think it is perfectly clear that conditions have changed in some ways. Of course the sun shines just the same as it used to; the wind blows, and it rains and we have sudden changes in the weather. Yes, we have different conditions from what we had even since I can remember. We have more fungous diseases to fight, and we have to fight them harder, but we can raise just as good fruit as our grandfathers did.

Mrs. Virginia C. Meredith: Aren't all these disadvantages more than set off by the different varieties and the appliances we have?

Mr. Van Deman: Yes, we can handle the fruit business much better if we will. That is all we lack—the will.

Prof. Latta: We will now close the discussion for the time. This afternoon the subject of forestry will be the one for discussion. The speakers are all here and are in the room. We are glad to announce this fact, and we want to begin on time. We did not begin on time this morning, and I fear we set a bad example. We are to meet at 1:30. If possible we will have some music. If not, we will proceed without it. Invite your friends to come this afternoon.

We will now stand adjourned until 1:30 this afternoon.

AFTERNOON SESSION.

Tuesday, August 30, 1904, 1:30 p. m.

Prof. Latta: We are all pleased to see so many faces this afternoon. This will make a nice nucleus for a healthy social gathering. If those who are in the rear of the room do not hear readily, I would advise you to come to the front at the outset so that you may not disturb the speaker, and so that you may also give room to those who come in later. Our theme is forest preservation and reforestation. I am not a forester. We will now have a talk by Mr. Weigle, who is employed by the National Department of Forestry. He will give us some account of the work of the National Bureau of Forestry. I want him to feel that he has the right of way to tell what he thinks the people would care most to hear about.

Mr. Weigle: Mr. Chairman, Ladies and Gentlemen—I am sorry for you people this afternoon. This program called for our honored Chief of the Department, instead of that, a very inferior article is to take his place, and so I hope you will not charge up anything against me, but charge it to Prof. Latta.

Prof. Latta: We are very glad to have this department represented here. Very glad indeed.

Mr. Weigle: The topic in the program calls for something on the work of the National Bureau of Forestry. That you may understand better whether the Bureau of Forestry is progressing or not, it may be well to give just a bit of its history.

Through the agitations of an association of scientists, Congress was memorialized to take some measures toward the preservation of our forests. In 1876 an appropriation of $2,000 was set apart for the employment of some person qualified in the natural sciences to look into the condition and amount of available timber in the United States. This appropriation was made continuous and in 1881 raised to $5,000 and a Division of Forestry created. In 1886 Dr. B. E. Fernon, a trained forester, was appointed chief, and scientific investigations were at once begun. In 1896 Dr. Fernon resigned to become director of the Cornell University Forest School, and Mr. Gifford Pinchot, the present efficient chief of the Bureau, was appointed. The work has grown so rapidly that it became necessary to have a reorganization to facilitate its business. This need was recognized and in 1901 out of the Division a Bureau of Forestry was created. The needs of the work were constantly recognized by increased appropriations from the $2,000 in 1876 to nearly half a million at present.

Owing to the lack of trained men there was comparatively little field work done prior to 1900. At present this want is being supplied by the trained men from the several forest schools.

After the Division of Forestry took the rank of a Bureau it was reorganized and divided into "divisions," each division having an executive head known as "Chief."

The present organization calls for a division of:

1. Forest measurements.
2. Dendrology.
3. Forest management.
4. Forest extension.
5. Forest products.
6. Records.

The executive heads at present are:

Chief of Bureau and Forester—Gifford Pinchot.
Division of Measurements—Overton U. Price.
Division of Dendrology—Geo. B. Sudworth.
Division of Management—Thomas H. Sherrard.
Division of Extension—William L. Hall.
Division of Products—Herman Von Schrenk.
Division of Records—James B. Adams.

The Bureau of Forestry aims to perpetuate the forests of the United States for their utility. This utility may be in the capacity of protection, water conservation or lumber; either of which involves a problem that is far more interwoven into the social fabric of the country than the casual observer is aware.

Now, then, as to the problems to be solved by the several divisions I see no better way to inform you of the work of the Bureau than to tell you what is being done at the present time, as largely what is being done now is a repetition of what has been done and of what shall be done; of course, new problems will arise, and some have possibly been settled that shall never again arise.

The work of the Chief of the Bureau is of a general character, mostly advisory. It is his business to see that the right kind of men are at the head of the several divisions. The needed legislation must be looked after by him, he spends much energy in having the lumbermen see that the Bureau is their friend and not their enemy; he has spent much time and energy in bringing about an amicable settlement of the grazing problem of the West; he has much to do with the co-operative work with the states; the connected problems of forestry and irrigation; tours of inspection, etc.

Division of Forest Measurements.—This has to do with lumbering; co-operative state work, and the various kinds of measurements that are taken in studying tree growth. The lumbering operations being carried on by the Bureau at present are on several of the forest reserves and on an Indian Reservation in Northern Minnesota. This reservation is to become a national forest reserve after it is lumbered. The work is conducted so as to cut the trees above a certain diameter only, and to leave a certain number of seed trees, principally white pine, to seed up the tract.

This lumbering differs from the usual way of lumbering, in that great care is taken to leave the tract, after the merchantable timber is removed, in a condition whereby another crop is assured. Instead of the usual burning of the slash and the destroying of all the young trees left on the ground, measures of protection from fire will be installed. The tops will be lopped so they will decay quickly.

Co-operative work is at present being carried on with Wisconsin, Maine and California. Season of 1903, with California and New Hampshire. In this co-operative work with states the state makes an appropriation to be used in forest investigation in co-operation with the National Bureau which is willing to spend a similar sum in the investigation.

California appropriated $15,000. This will go largely toward defray-

ing the expenses of the men in the field. The salaries of these men are borne by the Bureau of Forestry.

The work in California was begun in 1903 and will possibly be completed in 1904. The work consists largely of making a type map which will show the distribution of the several species; the approximate number of thousands of board feet per acre; the burned areas; the lumbered areas; timber line on the mountain, and possibly some other things of which I at present do not think.

A critical study is being made of the reproduction of the several species, which species is being most lumbered, and why, objections to so-called inferior species, location of sawmills, capacity, when they sell their product, manner of lumbering, amount and character of waste left in the woods, wages paid, sanitary condition in camps, character of men employed, etc., a study of fire and grazing problems, and effect upon streams in lumbered areas, a study of the rate of growth and measurements of the heights and diameter of the several species on the different soils and locations, and many other problems of less importance.

Division of Dendrology.—By dendrology is meant tree botany. The work at present under this division is a study of the Tanbark Oak on the Pacific Coast; study of the Four Leaf, Torry and Bishop pines in California. A study of the native exotic acacias of California and a study of the big thicket country of Texas. This division also has charge of the study of the improved methods of turpentine orcharding and of the exhibit of the Bureau of Forestry at the St. Louis Exposition. The old system of turpentining was to cut a deep pocket near the base of the tree and allow the pitch to drain into this from a scarified surface above. There are many evils about this system. Much of the pitch instead of going into the cut pocket would miss it and flow down to the ground. This was not only a waste but a great feeder for the annual fires that run through the southern pineries. These pockets weakened the trees in themselves and often being further weakened by fire many thousands of them were broken off by the wind. The new system does away with the pocket and instead uses an earthen cup into which the pitch is drained. The pitch is drained from the scarified surface of the trees by means of two strips of tin stuck in this surface, slanting toward each other, one being a little lower than the other. The pitch drains from the lower into the cup. The lessened surface of the pitch exposed to the air increases its value at least 25 per cent. and as more is caught by the new method with less injury to the tree, many turpentine orchardists of the South have already taken hold of it, in fact so many that the few factories were unable to supply the demand for cups.

The exhibit at the St. Louis Exposition is in charge of Mr. Gaskill.

In this exhibition a collection of pictures lining the walls of a long narrow room fully represent the character of the forests in all parts of the United States. A large map of the United States made of putty and paint shows the forest regions in color, and by means of colored pins shows the location of the National Forest reserves, forest schools, and places and kind of work that has been done in the United States by the Bureau of Forestry. Piles of railroad ties treated to creosote show some of the work of the Division of Forest Products. Samples of piles are shown that were in use in southern bays not more than six months which were thoroughly honeycombed, while samples of others that had been first creosoted and then put in the same place were perfectly sound after five years' service. Outside the building you will find logs of Cedar, Red Wood, Bull Pine, Oak, Sycamore, Poplar, etc., of immense size. Many of the States, the Philippine Islands and Canada also have most excellent exhibits of those forest products. Don't fail to visit these exhibits if you attend the Exposition, as you will surely be much interested.

Division of Management.—This division is responsible for the making of the working plans, commercial tree studies and woodlot examinations. At present the Bureau is making working plans for—

1. Emmet O'Neal, Northern Alabama.
2. Northern Pacific R. R. Co., Idaho.
3. Hillman Land and Iron Company, Western Kentucky.
4. Ansel Dickinson Estate, New Hampshire.
5. New York & Texas Land and Cattle Co., Western Texas.
6. Weyerhauser Timber Company, Washington.
7. United States Coal and Oil Company, West Virginia.

Most of these represent large areas. The Weyerhauser Timber Company of Washington, have more than twelve hundred thousand acres, part of which contains some of the finest timber in the world.

Now it may be interesting to you to know just what is done in making a working plan. In the first place the owner must express a desire to have a plan of management laid down for his forest. This he usually does by writing to the Bureau. The Bureau then sends a trained man to examine the tract who writes up a report stating in some detail what conditions he finds there and whether or not he thinks it would pay the man to go to sufficient expense to have a working plan made for the tract. This report is made entirely at the expense of the Bureau. If this report shows that a working plan should be made an agreement is then entered into between the owner and the Bureau to the effect that the Bureau will pay the salaries and the owner shall pay the expenses of the men while making the working plan. The working plan after it is finished usually includes—

1. Maps showing the boundaries of the tract, ridges, rivers, ponds, roads, types of timber, contour lines if hilly, cut-over land, burned land, waste land, and anything else of a kindred nature that the individual tract would suggest.
2. A description of the forest by division, natural or artificial.
3. Tables of yield based on the study of the growth of the different trees under conditions now prevailing on the tract, showing how much timber can be cut now, and at different periods in the future.
4. An estimate of the merchantable timber.
5. Methods and cost of lumbering.
6. A study of the reproduction of the forest species, and a plan for cutting the mature trees with least injury to the young growth.
7. A plan for the protection of the forest against fire.
8. If the forest is too dense, the plan will include instructions for thinning. If too thin, a plan for increasing its density.
9. If the tract has large areas to be planted, it will include directions for making and caring for a nursery and the selection of species most suitable for the location.
10. A plan for the management of the tract.

In making a commercial tree study there are four conditions included:

1. Commercial considerations.
2. Biological.
3. Silvicultural.
4. Exploitation.

The first or commercial consideration is the one to which most attention is given, and some of the things included in this study are:

A. The area of commercial distribution of the given species in the various states.

B. Average stand per acre in the different localities of the occurrence of the species.

(These two studies furnish a basis for a map showing the commercial distribution of the species and illustrate by colors the variations in the stand in different localities.)

C. An estimate of the total stand of the species.

D. The different commercial uses for which the tree is employed.

E. Present stumpage prices.

F. Change in the stumpage prices in the last few years showing the tendency of the prices.

G. Size taken on the stump and in the top according to the uses for which the timber is cut.

H. To what profitable use could the timber be put which is left in the woods.

I. The drawbacks of the present system of lumbering and its effect upon the renewal of the species.

J. Condition indispensable for the successful renewal of the species.

K. Time required for the trees remaining after lumbering to attain merchantable size.

L. Value of land occupied by the given species, and

M. Taxes paid on the cut-over land; on the timbered land, and many other things.

The Bureau is now making a commercial tree study of the hardwood of the southern Appalachian Mountains, of the Sugar, Western, Yellow and Lodge Pole pines in California, Montana, South Dakota, and Wyoming.

Division of Reserve Boundaries.—This division of section, has to do with looking up the exact boundaries of the reserves, locating new reserves and making releases of some of the land now included within reserves. This work is being carried on in all the Rocky Mountain and Coast States, also in Alaska and Hawaii.

Division of Forest Products.—This division has to do with making investigation along the line of seasoning, testing and preserving forest products. This investigation in the seasoning of timber is for the purpose of finding out the methods of piling lumber, whereby it can be dried out most quickly with the least amount of checking and warping and its increased durability over unseasoned timbers in contact with the soil.

Also in the case of railroad ties. The loss of weight is quite a factor in the cost of transportation. While the tie is seasoning the money invested in it lies idle and interest is lost, but the difference between the cost of transporting a seasoned and an unseasoned tie pays the interest on the idle money many times over.

By testing is meant the finding out of how many pounds' strain a piece of timber will hold without breaking or crushing. This information is most useful to mechanical engineers.

By preserving is meant the soaking or forcing into the lumina and fibres of the cells a poisonous chemical that will not easily leach out. Creosote is the best known. Since all decay is caused by the presence of bacteria or fungii, if the wood is saturated with poison there is no chance for a fungous attack; therefore no decay.

Seasoning and preserving experiments are most adaptable to railroad ties, telegraph and telephone poles, fence posts, shingles, paving block, and bridge timbers. These experiments are being carried on extensively at present in co-operation with the Northern Pacific, Southern Pacific, Santa Fe and New York Central Railroads, and the American Telephone Com-

pany. Testing is being done in co-operation with Yale University, Purdue University, University of California, and in the District of Columbia.

Division of Forest Extension.—This division has to do with investigations that lead to a knowledge of the species most suitable for planting on different soils and under different climatic conditions.

The time and how to gather, preserve, test, germinate and plant tree seeds, preparation of soil and how to grow and transplant seedlings are also treated under this head. Also the study of the silvicultural characteristics of the different species, especially their shade enduring qualities, power of reproduction, susceptibility to injury by frost, storm, heat, moisture, drought or insects, study of sand dunes and how to reforest them, making planting plans for woodlot and shelter belts; study of erosion and how to reclaim barren wastes that have been gulleyed by heavy rains; study of trees best suited for planting along the banks of rivers to hold the ground intact and prevent overflow.

Study of trees most suitable to reclaim the arid region of the Central West, and many other problems of less importance.

The work now in progress that is under the direction of the Division of Forest Extension is—

Work on a large government nursery on San Gabriel Forest Reserve, California; work on government nursery, Dismal River, Nebraska, and the planting of many thousands of pine on the reserve at the same place. These sand hills of Western Nebraska are too dry and barren for agriculture, but by an experiment made about fifteen years ago by what was then the Division of Forestry, it has been proven that the western yellow pine (Pinnis Ponderosa) grows very well; from this knowledge a reserve of two hundred thousand acres was set apart which is practically destitute of trees. A portion of this will be planted to pine each year.

Work is in progress on a government nursery on the Pike's Peak Forest Reserve. A planting plan is in making for Griffett Park, California.

Planting plans are being made in co-operation with farmers in Iowa and Nebraska. Study of Chaparral in Southern Sierras. Study of the results of forest planting in Illinois, Iowa, Nebraska and South Dakota; study of forest replacement in Nebraska, and study of reproduction preparatory to forest planting in Salt Lake Forest Reserve.

The planting of the Middle West so far has been largely of post timber, such as Catalpas, Locust and Mulberry, and we must expect this to continue among the farmers and railroads as it is from these only that quick returns can be received. The planting of forest trees in large areas will be done mostly by the States and Nation.

The leading citizens of the Rocky Mountain region and Coast States

who but a few years ago set up a howl against the forest reserves have practically all learned the benefit they are going to be to the West in the way of lumber for her industries and water conservation for irrigation and are now praying for the areas to be increased and more efficient management.

WOODLOT PROBLEM.

Woodlots are not very large, yet the aggregate makes many millions of acres of timber. Hence, it was thought by the Bureau that whatever could be done to benefit the woodlots would be the most valuable kind of forestry.

Field work was at once begun in the New England States and New York, then Michigan, and next Ohio, where I am working at the present time. Our method of procedure is to select the names of several representative farmers in each county. These names are gotten from the Agricultural College Experiment Station, and Superintendents of Farmers' Institutes. A circular is sent to each of these farmers which offers a free examination of his woodlot, and a written report showing how its conditions may be made better. If he chooses to avail himself of the offer, he sends in an application to the person in charge. The agent of the Bureau then visits the woodlot and goes through it carefully with the owner and points out the evils that exist and explains how they may be remedied, if such is possible, after which a report is written, sent to Washington, where it is reviewed, and typewritten, and a copy placed on file, and one sent to the owner.

Some of the evils found in the woodlots are—

1. Pasturing of cattle and sheep.
2. Absence of leaves and young growth.
3. Presence of grass, and stiff sod sometimes.
4. Hard dry soil.
5. Drainage of fields about woodlot and lowering of the water level.
6. Trees full of branches down the trunk, and dead at the top. Stag headed.
7. Woodlot open all around so that the prevailing west and northwest winds may pass through uninterrupted.
8. Stand of timber composed of inferior species.
9. Stand of timber too dense or too open.
10. Inferior species overtopping the smaller species of value and shading them out.
11. Growth of hazel or briars too dense for tree seedlings to have a chance to grow.

The best condition for tree growth is realized when you get it just like it is in a large virgin forest, the ground covered with a layer of humus that is changing into soil and a good mulch of leaves and seedlings all over the surface. Under these conditions the moisture is held and the ground remains fresh and loose.

Almost everything that is advised in bettering the condition of a woodlot aims at one of three things: (a) Density; (b) species in mixture, or (c) bringing the soil condition back to its virgin state.

I have briefly gone over the work of the Bureau at the present time. This is very characteristic of the work. There are large problems entered into between the State and National Bureau. They are of great worth and are doing great good in our state forestry work.

Now I will say a few words concerning the work I am doing myself in Ohio. I have been sent for to examine the woodlots of Ohio with reference to bettering their conditions.

Prof. Latta: Will you permit of questions being asked you at this time?

Mr. Weigle: I should be glad to answer any questions.

Prof. Latta: Would you advise thickening up a forest by actual planting or letting the forest reseed itself?

Mr. Weigle: In places I would let the forest reseed itself. Another way is to plant walnuts. If you will plant walnuts and keep the stock out they will grow, if not the stock will tramp them all down, and in a few years' time you will have the forest replenished. Just stick the walnuts in and leave them to themselves and in the spring they will start up, and you will soon have a very valuable tree.

Prof. Latta: Do you find the farmers quite ready to keep the stock out?

Mr. Weigle: I have found no objection to that. I say to them, which is more valuable, to turn your cattle in here, or to let the woodlot grow? Which is more valuable the increase you get in your cattle or the increase you get in the woodlot? Just see here. You have twenty acres of forest here, and one hundred and twenty-five sheep. Why not fence off a portion of this woodlot for them? The grass doesn't amount to anything at all. It doesn't contain very much nourishment. You will find good grass in the forests in some places, but not very often.

Mr. DeVilbiss: Are you ready to protect the locust against the borer?

Mr. Weigle: No, sir; only to cut down the tree and start a new growth. A number of people will not do that.

Mr. DeVilbiss: Would you advise against planting the locust?

Mr. Weigle: No, sir; it is very persistent and will grow anywhere. I was in Ohio where a man had quite a number of locust trees and he did not know that there was a borer in a single one of them, but there was. He planted seven thousand this spring and intends to plant ten thousand next spring for fence posts. The old trees are completely full of the borer, but they grew all right anyway. If you do not have the borer it is all the better.

A Delegate: What kind of soil did he plant them on?

Mr. Weigle: A clay soil. That clay soil may be different from the clay soil here, however. And it depends upon the kind of clay soil. I am not sufficiently up on soils to tell what kind of a clay soil it was, and whether it was the kind we have here. There was very little sand in it—all clay soil.

Mr. Swaim: Would the reforestation of land have anything to do with the rainfall? Would it increase or decrease it?

Mr. Weigle: Well possibly it might have a slight effect upon the rainfall, but according to our investigations I do not think it had much to do with the total amount of rainfall in the country. Forests keep the rain from being carried off of the ground in a very short time.

Mr. Swaim: Will you give in detail the method for treating timber with creosote for preserving it?

Mr. Weigle: I do not know that I can give you the method in detail. But we used to put the timber into a car and run the car into a large cylinder and then they would pour in the creosote, and put on a hydraulic pressure which would force the creosote into the fibers and cells of the timber, and that would kill all diseases. All decay comes from fungous diseases. When you stop this you have brought about the conditions that are necessary. An Italian invented this process. It was to force the creosote into the cells of the timber first. Fill up the cells with air then turn on the creosote and fill up the fibres. Of course some will force its way into the cells. When you take off the pressure the air will come out of the cavity of the cells. I do not know whether this will be practical or not.

Mr. Swaim: That process is particularly adapted for use in a large way?

Mr. Weigle: Yes, I hardly think it would be practical in a small way. Many lumber concerns are doing this with their timber, and you might pay them to have yours done likewise. This would be cheaper.

Prof. Latta: I think we will have to leave Prof. Weigle just now, and if your question hasn't been answered you will have to hold it for a while until we have general questions. Our sister State on the north has given attention to forestry and the forestry question in recent years, and it has made substantial progress. There are men there who are very much interested in this question, and we are very fortunate to have one here. Their southern boundary comes very near to us and what they have done there will have close application to what we can do here. We will now hear from Prof. Roth, Forest Warden, Ann Arbor, Michigan.

Prof. Roth: Mr. Chairman, Ladies and Gentlemen—You all remember from boyhood and girlhood times when you had hard times accounting for yourselves in school, so you just talked around. Possibly you would tell some interesting story so as to get off the main point. I am booked to tell you about the reforesting in Michigan, but I can tell you all I know about it in a very few minutes, so it falls to my share to talk around. However, I shall try to make clear what we are driving at. It is almost necessary to know something of the conditions with which we were surrounded in order to appreciate the motives and efforts. The State of Michigan, just north of you, is a bigger state than yours, we think, in various ways. We have about thirty-six million acres of land, and it can all be divided nicely into halves which differ very greatly from each other. One-half of our state is really well settled farming country like what you have here in Indiana. In fact when you cross the line you would not know that you were going from Indiana to Michigan on account of the radical change. Well, as I have said, one-half of our land is very well settled. One-half is settled by farmers, and of that half at least sixty per cent. of the improved land is cleared and fenced. But the other half is very different. One-half of our state is in a distinctly unsettled condition, sparsely settled, with very little farming. Of that half there is not a county that has as much as thirty per cent. of land settled. Taking the land on a whole, there is scarcely five per cent. —five acres out of a hundred—that is improved land. You would not suppose it when you are coming to visit us where we have nice things and good things. You could hardly believe that we were so rich in real wild land. In this particular we differ radically from you here. We have in

our state a large area of country on which we can raise not only all the timber that we need, but a great deal more. If we look at the forests and the forest lands of Michigan they divide themselves very nicely into three great groups. The first group is the farmers' woods. The farmers in this settled half of ours have about twenty-five per cent. of their land still in woods in some form or another. They have woodlots like yours which occupy the immense area of over four million acres. We have another body of land where forests are still growing; mostly forests of hard wood which were in former times mixed with pine. I can not tell you how large that body of land really is because nobody has taken the dimensions of it.

We have three bodies of forest land, and the most important from our standpoint is the old pinery lands. This is most important to the State of Michigan. I will not lament about what has happened to all this, but I simply want to tell you that we had immense areas of pinery lands which are practically denuded of timber. Our woodlots are just like your woodlots. They are very thin, because the best has been cut out. They are not producing one-third or one-fourth of what they ought to. The farmers seem to think that they do not care what their ten acres are producing, except for firewood. This means a great deal to the State of Michigan when four million acres of its land is producing only one-fourth of what it should produce. Wood in our part of the country is wood. It is not so in Indiana. We value wood even for firewood, and it produced three dollars on the stump, and if the farmer only gets six bits' worth when he is losing the other part of the three dollars that he ought to get from his acre of land, can't you see what the state is losing? The farmers are losing three million dollars a year. This part, however, has been amply touched, so I shall not speak of it further.

The other part of the hardwood lands that I have referred to are the forests that have been culled by the lumbermen of bygone times for what pine there was in it. There are thousands of acres of just this kind of land. But you couldn't tell it if you were not an experienced woodman, for it requires an experienced woodman to tell it. You see elm, maple, and basswood, and other varieties of hardwood, very little oak. But by the way this is interesting. You see there a mixed forest of hardwoods, which trees are from eighty to one hundred feet in height, and the difference between the hardwood forests and what are known as the pinery lands is so conspicuous that you can follow almost the road in many places when walking from one land to another. These forests which form the second portion of the land today is being cut off by lumbermen at the present time. The lumbermen have refused to sell these lands. They have held them, knowing perfectly well that this timber would come

into market and that they would make big money. Just the other day I visited a tract of land north of Rudyard with a man who bought it fifteen years ago who paid for it on the average of about three dollars an acre. He showed me a number of basswood trees that were worth at least four times as much as he paid for a whole acre. That gives an idea of what these men are doing, and they know perfectly well what they are doing, too. This land is all right. It will be just like the big hardwood body which composed our farm country, and it will be cut off by lumber men and sold at from six to ten dollars an acre. Then it will be settled up by the farmers of Michigan.

But the third body of timber lands is the body that concerns us most. It is the old pinery lands. Some of you have traveled over this country. I know that quite a number of Indiana people come up to our country to hunt and fish, and so some of you know perfectly well what these lands look like. Some may not know, and I can not tell you, because I am not eloquent enough to tell you how they look, for they look like "all possessed." There are a lot of blackened, fire-charred stumps. This comes as near as anything I can say to describe how they look. You might travel there for a day and night and not even meet man or beast. It seems as if the wild beasts of the forest have deserted the land. Our land has not been treated properly. I was speaking with a commercial man the other day, and he told me that he didn't believe that ten per cent. of the land was covered with timber like it was even twenty-five years ago. It is almost inconceivable what changes have been made in these lands. The story is one about like this. You have a sandy soil, an immense level country, although, by the way, you are on top of one of the highest water-sheds of Michigan; one from which the water goes in all directions. We have one large river which we regard as of great importance, and we will prove this to the world. You know the character of our country. Its history is like this. We once had a magnificent forest, with trees from one hundred to one hundred and fifty feet in height, and so large in diameter that they were large enough to drive through with a team of horses. But the lumberman came with his saw and axe, and along came the fires, and now there is a blackened mass of ruins and the forest is gone forever. This is at least the impression the land makes upon you. Nature is just as kind with you here in Indiana as she is to us. At the end of six or eight or ten years you will find that she has tried to re-roof the grounds. You will find a growth of poplar, birch and oak sprouts six or eight feet high. This growth will be all over the country, and it will be a pretty tolerable growth. But by this time there is just enough dry foliage on the ground so that when the man comes along who is forever smoking a

cigar or a pipe and happens to drop the burning ashes frm his pipe without stopping to see what has happened, this foliage is set on fire, not once in a hundred times on purpose, but from mere carelessness. It doesn't occur to the one that sets it on fire that these pieces of timber could ever be of any value. It never dawned upon them when they were setting fire to the woods that that timber could come into market. We then have another fire, and whatever nature has produced in the six or eight or ten years is gone. She does the same thing over and over again, and we have now stretches of country of thousands of acres which were in the first fire. We have charred conditions of all stages. This will indicate to you what the pinery lands are. And, mind you, we have a great deal of this. Some of you who have gone on the Michigan Central will remember when you leave Pine Creek, just north of Bay City, you practically never see any more real forests until you get just below Mackinaw. You will see the same thing unless you go farther north. Of this land we have, as I have said, millions of acres. We have all kinds of people in our country, and some that are not fit to live there. I believe too much in the State of Michigan, and that is exactly why I am doing what I am doing. We have had these millions of acres of land left in these conditions for years and years. Just think of it, and think what a loss it is to the State of Michigan. The land in the southern peninsula has not produced any timber for ten or twenty years, for the simple reason that fire came along and swept down what nature had tried to produce. Thus we have perhaps ten million dollars' loss per year, which means in twenty years a sum big enough to buy all the woodlands up there. And we have lost it, not because it could not be helped, but simply because the people of Michigan never realized what they were losing. They were just like the people who are not in this convention today. They should go at these things just as a business man does. Just think of what a single forest fire does. And yet the State has never employed a single man whose business it should be to guard against the fires. We had a law about '46 which made a man a supervisor of a township, and he was asked to do everything. How could he succeed? One man can't attend to all this.

You can readily see from the conditions of the pinery forests that I have described that it would not be very agreeable to have to pay taxes on such lands, and the consequence is that most of the old lumber companies have left the lands and let them revert back to the State for taxes. Today the State of Michigan is in a most remarkable condition on this account. Just to put the case in a terse way, one-sixth part of the State of Michigan is in soak for taxes. Now the State has tried to do something with these lands that would be for the good of the

people. They have tried to get men to take homesteads. I will tell you how they take them. A man looks around through a forest until he locates a cedar swamp which is worth five or six hundred dollars, then he hangs around until he gets the title to the land, and that very day, perhaps, sells it to some lumber company. And that is the end of that homestead, and the State unfortunately allows him to take another one when he gets another cedar swamp located. We have tried another thing. The law of the State says that these lands should be sold, and in order not to hamper the man who buys, shall be sold at a price set by the man in charge. Fortunately we have honest men in our State. That is more than some people can say.

Prof. Latta: We have some, too.

Prof. Roth: I am perfectly satisfied. I say that we have honest men because they refrain from giving these lands away. They have tried to sell the lands and get them on the tax rolls. Last fall eighty thousand acres of land were offered for sale in one county, and out of this eighty thousand acres of just such pinery land as I have described, eight thousand were sold, and I suspect most of that was on account of the cedar swamps, and it brought the magnificent sum of $1.25 per acre. The United States Government refused to take less than $2.50 for the arid lands in Wyoming, Montana, and the bulk of the lands out there, and we in the State of Michigan have sold lands at one-half that. We do not neglect our duty by not putting the lands on the market. We have done our best and failed. It is interesting to know that the State of Wyoming has a standing fund and lots of forests to buy up, and the maximum price is $25. What does that mean? It means that these people are willing to pay for their land, and that they have not lost any money at it yet.

To come back to what we have been trying to do. We tried to get rid of the lands, but at last the State has decided it is time to do something else besides getting rid of them, and has established a Forest Reservation, and has set aside as a starter all the lands that belong to the State within three certain townships, and has turned this over to the Forest Commission. This leaves the problem to the Forest Commission. They have complete authority over these lands. They can sell any of these lands if it suits them, and can buy any of the land within any of the three townships if they are considered worth the buying.

Prof. Latta: Does the State provide quite a fund for that purpose?

Prof. Roth: Yes, the State provides $7,500 per year for the care of the Forest Reservation.

Prof. Latta: They may use this money to purchase new land if they care to?

Prof. Roth: They can use that money in any way they like. They can plant trees, hire men to guard the land, etc. Now this little forest reserve, for it is certainly a mere baby compared to what we ought to have in our State, is regarded as the nucleus of the State Forest. This land is something like the land I have tried to describe to you before. It is on the Muskegon River. We all know the geography of our neighbor States very well. I will say that his river is one of our biggest rivers. It extends away up to the middle of the peninsula, which is Upper Michigan, but looks as if it didn't belong to us at all, but we claim it. There used to be a lumber town on this river that supported in the neighborhood of some eighty millions of acres, and got out six or eight hundred million feet of timber in a year. The land is level land dotted with swamps. The greater part of this has been run over by fires. All the dry land has been burned. There is not one single acre of the whole lot that has any semblance to the old forests. A man who has not been used to these woods would tell you that they were oak forests. You will see oak from three to five feet covering from one-tenth to one-third of the land, and there is hardly a marketable stick of timber on that land. It is no wonder some people object. They say, "What do you know about this? Have you tried it in Michigan?" We have to say, "No."

Mr. Swaim: Will you please tell me how you account for the oak being there?

Prof. Roth: That is very interesting. The oak has always been there. In the times when the pine forests were there, the oak had no show. The oak, by the way, is the only one of the hard woods that survived to any extent. When the loam leaves you all know the basswood leaves you. A few yards away none of these trees will be with you, and you will have only oak. It is something really remarkable. Now, as to being there. It has always been there, but when the pine was there it had no show. It does not reach any height or size. At this time you might have walked through the woods and after you came out if any man had asked you if there was any hard wood there you would have told him "No." But the oak has always been there. There are a few scrub maples there, also. The lumbermen and the fires together have cleaned out the pine forests. The only thing they could not kill was the oak, which has a capacity to sprout from the stump and keep itself going from year to year and from generation to generation.

The oak grows fast. It does not reach any great size. Thirty-five

feet is a mere baby alongside the giant we have here, and sometimes they are not more than nine or ten inches in diameter. We used to think of such as of very little value, but let me tell you we have learned to think of timber differently from what we used to. We used to think of nothing less than sixteen inches in pine. I have worked in mills where they have refused to take Norway. Today they are glad to pay from twelve to fifteen dollars for Norway, but they can't get it even at that. We are offered today, on the Forest Reservation, a dollar per thousand for the old, dry, blackened, charred stumps that stand up a monument of former glory. We are offered money—good money—and we have plenty of applicants for each stick of dry, dead cedar, and they will even dig it out of the mud. You will see we have changed from what we used to be. Time has changed us. This is what I was to speak to you about. The first thing to do is to protect. This is the most important feature, even in the matter of reforestation. There is hardly any large area up there but what has now, from close examination, the making of at least a woods. It would not make a good forest, but a poor woods. There are at least fifty, two hundred, three hundred or four hundred of these oak sprouts coming up, and if they get any protection at all against fire it will not be twenty years when we will have a lot of scrub oak which will at least be fine for fuel. It may be interesting to you to know that an oak fence post is considered better than cedar. Cedar will not outlast oak, as is usually supposed, but oak will outlast cedar. I think we have plenty to show for this. Then all the money that we are spending hiring men to go about and watch lest fires break out, will be justified by this growth which is right there now. We have now two Forest Rangers under the direction of a trained young man, who is the Forester; and, by the way, our young man Emory, is the first man in the State of Michigan ever employed in all its history to protect its greatest property. That may seem singular, and it will be a remarkable statement to make when someone writes up the history of our State.

In the year 1903, fifty years after the great slashing of our forests, we began to look around to see if this great property, the property worth billions of dollars—not millions, but billions—would not be worth protecting and looking after, and whether or not it would not be worth while to give the citizens something in return for the taxes they should have been paying year after year over into the treasury of our State. As I said before, we have two Rangers and one Forester. The Rangers are Chiefs of Police, and see that no fire breaks out. When a fire breaks out, they immediately start to work to have it put out, and the neighbors are enlisted to co-operate with them. They will hire men to help put

the fire out. We are practically at the end of the second season without having a single fire that was worth taking into account, and I assure you that the man who told you that the fires could not be kept out of the forests does not know what he is talking about. They can be kept down, and they will. The old country people have demonstrated it for the last five or six years. Prussia, France, Switzerland and Denmark have demonstrated this by protecting against forest fires, and they consider it a terrible calamity when one-half of a small fire for us is consumed in a single year. They have men especially to watch. They watch not only for the vandals who seek to destroy the property, but also for the careless man. When we sell timber we do not propose that a man should make a fourteen-foot road when four feet would do just as well. We do not propose they shall do nothing but destroy our forests and not build them up. We do this much, anyway. We make a study of the land and see what the different portions are suited for. For let it be understood, that the State of Michigan does not want to block the farmer from this land. We want him there more than anywhere else. Every acre of good farm land will be only too gladly turned over to a real settler. We are getting the land classified to know the good from the bad, and also to know what to do. Those who live on a farm will realize how difficult it is to know what is going on on fifty acres of woodland. If it is hard to look after fifty acres properly, what do you think of looking after several hundred thousand? Most people do not go through their wood lots systematically enough to know just what they have. We have to be careful about the trees that we attempt to raise. There are trees that we know almost of a certainty will thrive there. We do not get the Norway pine; we do not get palms. We set our trees out, and I think this would interest you. When I was first told to set trees out, Mr. Garfield, who is the head, and whom I hoped to see here, said to me: "Where are you going to get the men to set the trees out?" I told him that I would do just as I did in New York State. I was detailed to set out even a larger number of trees, and I got Canadians, Frenchmen, etc., whose great-grandfathers before them had never done anything but destroy the forests, and I lined them up in the morning and gave every one a mattock and told them they should do as I did, and I dug the first hole and showed them how. Possibly I would surprise you if I should tell you that two-thirds of the lumbermen would not know a pine tree when they see it, but this is true. Two-thirds do not know what can be done with that seed. But as I said before, we lined these men up and commenced to set out the trees. The first day they laughed, but the next day they began to take quite a great deal of interest. From that day the forest looked entirely different to them.

Instead of a spirit of wanting to destroy everything, they wanted to preserve everything, of wanting to preserve every tree. At first these men thought it was folly to be doing as we were doing, but they kept on doing as they were told so long as there was $1.50 in it for them. Before a week they had a totally different feeling than at the start. I have heard such conversations as this: "This will not amount to anything. The fire will come along this summer and destroy all this. This is fooling away a lot of good money." But at the end of the week something like this: "If I catch a fellow setting fire to this land," etc. I am satisfied that if any of that gang of men that were working for me should see that there was any likelihood of the plantation being burned up, they would work like Turks day and night. There was not a single one among them that would have thrown a cigar away and gone off to leave it to burn.

I suppose I ought to say something in regard to this planting. You will be wondering whether we broke ground. That would be an impossibility. There are too many pine stumps, half charred, over the whole country. We lined the men up and kept about five or six feet apart. I told the men to dig up the ground and plant one of these trees wherever there was an opening big enough to insure success for that tree. We dug up the ground as much as we could, and the last time I visited the place I found that the trees were growing beautifully. We have now a nursery in which we estimate that we have in the neighborhood of about six hundred thousand plants. We will make this nursery larger and will raise trees there by the million. The trees in this nursery are about two inches high now, but they will grow some in the next fifty years.

Prof. Troop: Is this reforestation going on only on lands controlled by your commission?

Prof. Roth: There is to my knowledge no great enterprise of that kind in Michigan. There were a few efforts made, but they were just spoken of.

Prof. Latta: Does the State in any way encourage the introduction at the present time?

Prof. Roth: It hasn't done so yet. The Michigan Forestry Commission is today recommending governmental and legislative arrangements. They recommend some legislation which will encourage it. We have the same trouble that you have. Precisely the same trouble. Mr. Freeman will explain this to you. We have a man who does take care of the woods in a most unmerciful way. In one county that I know of, this man—and he was none other than the tax gatherer—and he happened to be a

man who understood about logging, and he estimated the timber at so much per thousand and made the tax so high that the man could not afford to pay it. This caused the man to destroy his timber. In another county the taxes were much lower. The first man was taxed from forty to fifty dollars, and the next man was only taxed about eleven or twelve dollars. These were taxed under precisely the same conditions.

You wonder why we are in such a rush. I will tell you why. It was only a few years ago since we shipped our pine to every State, almost. Kansas City, St. Louis, and those Western places were our principal points of shipment, but today there is not a foot goes outside of the State of Michigan. We have today in the State of Michigan precisely what you have in the State of Indiana. We have in our lumber yards in every town in Michigan, Pacific Coast shingles, red cedar shingles from Seattle, and we have lumber from the Pacific, and we have yellow pine, as you call it, North Carolina pine, and we have cypress. What does this mean? It means that the cost of such things will be very much more than formerly, because of the added expense for bringing them over the hot prairie country, a distance of nearly two thousand miles, through the desert part of the way. You will find more Michigan lumbermen in Norfolk, Virginia, possibly, than any place else in the United States. The amount of capital that was invested in Michigan in lumber in 1890 was just two-fold as great as that invested in 1900. It seems to me this is very serious.

There is another point. We who are thus connected believe that it is a waste—a waste of the worst order, a pernicious waste—when the State allows millions of acres of this kind of land to lie as waste land. This land is a nuisance, besides being a waste, for it affords a rendezvous for objectionable people, and whenever times are hard it is a place of more meanness than you have ever dreamed of. When all this comes before you it is positively heartrending. We came across a family last winter living in a place like this, and they were positively destitute. They had nothing in the house but beds, and little enough of them. My Ranger found this. This is a very serious matter when you put a poor man on a poor acre. Give a poor man a good acre when you want to give him something.

Now, another word with regard to the action of the State. You will wonder why the State does not pay more attention to this. If this work is to be a go it should not be cast off on charity, but should be a business proposition. It should be either that or nothing. And now I want to say to you that I have no charity talk to make for forestry. If the State of Indiana should find out tomorrow that it would be better for it to clear off every acre of land, then by all means clear it. The history

of Europe is old, and it is one worth studying. These people have gone through fire from start to finish. There was a time when they believed in burning off the woods. That time has long gone by. It is better in history, and still better in tradition. When I was born forestry was no longer talked of as an experience. It was a matter of course, the same as corn is with you. The State of Michigan today makes $5 an acre over and above all expenses on every acre of its farm lands. This is just the same as on the farm and with the large corporations. We have three forms of forest in our country. When the father is a saving man you know what the boy does. The father keeps a very good forest, but he steps out when it is about forty years old. The boy says, "I will take the money now." That is the point. The State is just a large individual. A man always wants big interest. I have been asked within the last three months, "How much could we make by handling these lands in the way you suggest in the way of interest?" I answered, "Two per cent." That settles it immediately, for they want eight or twenty per cent. They would rather have ten thousand per cent. over night. This is the spirit of the American. He wants big interest, and wants it quick. What we want is two things—protection and reasonable taxation. Take a lumberman in the north, and bring him into court. Or, better still, bring in a horse thief and try to convict him for stealing horses. It is impossible as long as you have horse thieves on the jury. Now, this is just the state of affairs. We have very much just that kind of a time up there right now. They seem to have an idea that they must get this land away from the United States under any circumstances.

The next thing is taxation, and that will be dealt with a great deal better than I can. But at any rate we will be able to solve this matter of taxation before long.

Prof. Latta: When you ask for a dollar and get two it makes you feel good. We asked this gentleman to come over here and give us a talk, and he did it. I want you to think of this talk, friends. Mr. Freeman, the Secretary of the State Board of Forestry of this State, will speak to you now. We have the methods of the State of Michigan. In our State it is a little different. Let us know what is being done along these different lines.

W. H. Freeman: If I were to come before you and talk for a day on forestry in Indiana I couldn't say the things as well, or the things that should have been said, better than Mr. Roth has put them to you. Our timber situation is somewhat different than that of theirs. Every state has its own methods of forestry. The State Forestry Association I think will reach direct to the people.

In order to say the things to you that I want to say, and to say them in the best way, I have written my remarks, and will ask you to pay close attention while I read, and I will then be glad to answer any questions.

THE PROGRESS OF FORESTRY IN INDIANA.

W. E. FREEMAN, SECRETARY STATE FORESTRY BUREAU.

The progress of forestry in Indiana is without question most complimentary to all concerned. The advance is clearly observable along two lines, the progress by the state as such and the progress of the people as individuals. The work of forestry as advanced by the state is divided into three distinct features, yet all are harmoniously linked in control. They are a legally established state department, a state experimental station and laws for the encouragement of individual forestry.

The state department consists of a legally created board of five members appointed by the Governor for a term of four years. In this connection the state also maintains an office in the Capitol and appropriates annually funds fairly ample for the prosecution and the execution of the duties designated for the board by the law which created the department. The original law was amended by the last legislature in several very beneficial ways. New and differently occupied persons were provided for in the appointment of the succeeding board and the funds for the office were augmented. The succeeding board will be composed of two lumbermen, a farmer and two professional men, one a member of our State Agricultural School and the other a person of technical forestry training to become the secretary of the board and the superintendent of the state forest reserves and experimental station.

In connection with the above advance the state has brought and established a State Forestry Station for experiment and practical demonstration of forestry principles, a 2,000 acre farm, and the same is now being put into order and operation in Clark County, Southern Indiana. It is the purpose to work out and demonstrate the practical problems of forestry for the benefit of the people of the state and to grow trees for distribution to any one within the state applying for them, and contracting to plant and grow them under instructions from the department. It must, however, be understood that the principal object sought in this experimental movement is the demonstration of the practical and the financial success of forestry on the cheap broken lands so abundant in Southern Indiana, and which are at this time almost worthless to

the owners and thereby to the state. There are about 600,000 acres of this character of land which was formerly heavily timbered, but has been denuded and now abandoned except for scanty grazing, patch farming and for small second growth timber. In a later connection this feature will be more fully discussed.

In 1899 the legislature passed an act for the encouragement of forestry by permitting timberland owners to exempt a portion of their holdings from the regular land appraisement taxation, but this law has not proven very satisfactory, and my opinion of it is that it should be repealed. I so speak because it does not meet the requirements of the aims in such a law and is perhaps unconstitutional, besides it affords opportunities for dishonesty.

The progress of forestry with the people as individuals I am sure is as distinctly evident as by the state. In all parts of the state I find the people enthused with the movement, and they are putting into action their enthusiasm. A general awakening to the necessity of forestry conduct seems to be the universal condition. This sentiment is shown in the attempts to economize the present forests and general tree planting. This awakening has revealed to forest owners that timber is the most valued and most sought product now in the market. It is but recently that owners of good trees have found that they are worth big money. Consequently their wanton destruction and lavish use has been superseded by a sentiment of high appreciation and saving regard.

A good old quaker farmer in Hamilton County said to me a few weeks ago when I visited him at his request to give him advice for the proper handling of some trees and general forestry work on his farm, that his forest trees were the most valuable property he had; that the increase of value was greater on them than anything he could think of on his farms. Pointing to some rather fair oak trees he said, "Three years ago I was offered $18 per thousand for them just as they stand, the next year I was offered $25 per thousand just as they stand, and this last spring I was begged to sell them at $35 just as they stand." "Why," he says, "do you know that I have cut, rolled into log heaps and burned to get them out of my way right on this farm a thousand trees better than any of them." The experience of this farmer is the experience of every farmer of land accumulation who has lived in Indiana since the Civil War. Because then of this commercial value forest owners are taking care of their timber land. They are harvesting only the matured and damaged trees, they are letting nothing go to waste, they are protecting them against fires and in every community are forests from which stock of every kind is excluded by the owner, that the area may restock itself with new trees for the future. Areas that have been cut over

and have grown up in dense thickets are being cultivated to form a future forest. All the weed trees of every sort are cut out and the right trees trimmed up to give them the best impetus of growth. Thickets in the nooks of fields that have in former years been viewed only as rendezvous for rabbits and quail are receiving forestry attention by many, and only a few years of waiting will reveal the wisdom of such conduct.

Another feature in which the people are showing their appreciation of the forestry movement is in the post and tie timber plantings so universally being conducted. In almost every community with which I am familiar farmers and land owners are planting black locust, catalpa, chestnut and similar trees for fencing posts and railroad ties for the future uses. I can not begin to estimate the extent of such plantings, but I am sure from the reports of nurserymen from this and adjoining states that millions of such trees have been planted in Indiana during the few years just passed.

The progress of forestry by the people as indicated by these features just discussed does not excel the progress in ornamental and protective tree planting. The Arbor Day planting for shade, ornament and protection upon the lawns of both public and private grounds and around the farm premises has been made the subject of personal attention everywhere.

The one form of forestry that has not received the attention which it should is the planting of areas to the hardwoods as commercial investments. There have been scarcely any notable tracts of the best hardwood trees used in our general manufacture planted to form the supply of those needed timbers when the present limited supply is exhausted. It seems to me that this feature of forestry should be promoted speedily by the State's making legal conditions for its advancement. I am inclined to think that the failure along this line is due to two causes, the best of which is the lack of definite knowledge of the time it takes for such plantings to mature to profit and also the degree of profit to the planter, and secondly the selfish disposition of most people to not do anything which they themselves might not reap the benefits from. They do not possess any very great altruistic tendencies. In these elements of hindrance there exists mistaken opinions which I hope will be soon displaced by experiments that will no longer leave chance for retarding this most essential work. More upon this phase will be brought out in a following discussion.

The needs of forestry in Indiana are not mythical. By some it is viewed as a fad, a cranky hallucination originated by an enthusiast for trees. But there is not a more fundamental movement affecting the industrial, economic, climatic and ornamental welfare of the state than it.

By reason of Indiana's unexcelled hardwood lumber and timber supply in past years there are within the state today, in active operation, 940 woodworking establishments employing 39,672 persons. In addition, caused by other resources in the state, there are 2,746 establishments which use lumber and timber more or less in the getting out of their products of manufacture. Besides these enormous demands for the timber which now exists there are nearly 200 coal mines, more than 1,000 gas and oil wells using a large amount of lumber and timber in various ways in their operation.

Of the nearly 19,000,000 acres of unsurpassed hardwoods which was nature's existing gift to Indiana, not more than three-quarters of a century ago there now remains but about 1-75 of that amount, and not more than 1-16 of this fractional part possesses merchantable timber such as the manufacturing institutions are seeking and must have.

The large manufacturing industry, the great productiveness of the soil for the larger part, the thickened population now energetically employed, together with the depleted forest supply in sight furnish a fine problem for economic solution. These manufacturing industries to continue in existence must have the material with which to operate. If it does not exist within the state then it must be imported or the industry exported, which fact will be determined by the corporation from the standpoint of its own financial interests. If the material supply becomes exhausted the industry will cease. The timber supply within the state is small and but little effort has heretofore been made to save and replenish it. It can not be manufactured. It must grow. Not all the uses of wood can be substituted. Wood is a necessary product in the general industries, and hence the logical forestry movement.

The large population demands that the rich agricultural lands shall be devoted to agriculture to supply the daily living necessities. The tiller of the soil wants the returns from his land quick, and hence he will not indulge, if he possess rich land, largely in forestry, because of its remoteness of return, even if he made more and easier money. Hence the forestry problem in Indiana. The industries must have wood, and the cheap unfit lands for good agriculture must grow the trees to supply the demand, and thus leave the rich agriculture lands to sustain the population with the products of living. The cheap lands will grow the timber if devoted to it systematically. The timber will keep the industries, the industries will employ the people, and the people will demand the agricultural products of the farmer to live upon, and thus a complete division of labor of such auxiliary relations within our state that even a dyed-in-the-wool pessimist cannot but admire them.

I do not present this thought to you as a phantom to scare you or

to hold up to you that upon forestry depends the ultimate and absolute salvation of Indiana and its industries. But I do present these thoughts to you with the firm conviction that active forestry along the lines advocated will prove one of the greatest factors of industrial security and a wise course of procedure in order to meet the future problem when it comes, as come it has to other nations, and come it surely will to our nation and to Indiana as a part of it. It may not happen within our time, but it will come to our posterity, and to them we owe the obligation of an honest effort in this matter.

In connection then with this major idea of forestry which I have presented, and before I take the minor features, I want to give a few ideas of legislation which I am of the opinion will do good. I don't mean that we can legislate away the confronting embarrassments. If legislation could solve the timber question then it would be fairly easy of solution because the people are in sympathy with the movement, but that can't be done. It is action and not law which will solve these problems, but legislation may aid action, and that is what I want to consider. If a law were enacated which would encourage the devotion of the cheap and broken lands to forestry, would it not be a good law? I am convinced that nearly all such lands are quite as good for forest growing as the rich lands. After careful investigation I am sure that the larger part of the wood-working institutions now located within the state use as the raw material second-growth hardwoods of from eight to twenty-five years growth, and that it possesses the prime attributes at such ages for the uses. I am also convinced that under right cultivation a good quantity of material can be produced upon an acre in that time. We are not sufficiently informed to state facts in this, but already we have begun the movement to get these facts and only need more time. A great many evidences are available which convince me that this major plan is a good one if backed by suitable legislation and administration. I have in mind that if a law were enacted exempting from taxation any such or all lands for that matter which the owner will contract to devote entirely to forestry for a period of years under the direction and instructions of the State Board and that after such period the product value only be taxed that it will prove a very beneficial law. My opinion is that such a law will cause investments in these lands and forest estates will be established which will not only be more profitable than endowment insurance to investors, but will enhance the value of such lands, solve to a good degree the timber question and generally promote the welfare of all.

Another need which it seems to me should be more looked after by the farmers is the devotion of a practical part of the farm to permanent

forest. If every land owner, it matters not how productive his soil may be, will set aside a certain portion of his acres and devote the same exclusively to forestry that it will prove a wise course for him financially and generally, and will go far in the solution of the hampered conditions of timber supply in every community. I believe in this connection that the law just mentioned should be made to apply. Three things are wrong with the present forests, namely: they are poor in the quality of timber which they possess, they are more devoted to grazing than to forest and are not rightly located on the farm. The vast majority of the timber now standing is beech and other similarly valued trees. They are mature, damaged, and do not pay a fair dividend for their retention. The area is also constantly grazed, and thus a new growth is prevented from forming. The location is a result of consequence and not of choice. When the farm was planned clearing began at the premises and expanded in all directions until the remnant of forest remaining is in the remotest corner and perhaps occupies the best land on the farm. In ninety-nine cases out of every hundred, if half or even less of the present forest area were devoted exclusively to forest purposes and the remaining part to grazing far more of each would be obtained. A forest tract if not too densely sodded, and if protected from fire and stock, will soon form a dense undergrowth, which if given a little forestry attention will in a few years exceed the most sanguine expectations. If the natural conditions are not suited because of sod and lack of seed trees, the ground can be broken up and seeds scattered of the kinds desired. Frequently, however, when the sod is broken the seeds lying dormant in the humus spring forth and sowing is unnecessary.

It is my judgment that farmers should take this matter under sincere consideration and plan new forests on their farms. Place them where they will form a protection to the premises or otherwise better located. I also think the above law will aid much in the promotion of this feature, though I am sure I do not want legislation to usurp the duty individuals owe themselves, but this feature largely carried on will be so general and so beneficial in results that I think the state should encourage it by some legislative action that will insure its being done. It will be casting bread upon the waters to be gathered up many days hence, some fifty, some sixty, and some a hundred-fold.

Prof. Latta: If you have any questions now is the time for them.

Mr. Stanley: In regard to the underbrush that will spring up in the woods, will that retard the growth of the timber?

Mr. Freeman: Yes, it will, and should be kept down. That is one objection we have got to not turning the sheep in. They will not confine

themselves to these bushes, however. It would be a fine thing if we could educate them to eat just these and nothing else.

Mr. DeVilbiss: Do you believe that all is true that is claimed for the catalpa?

Mr. Freeman: I am glad that this question has been asked. I intended to express myself on the Catalpa Speciosa. It is my conviction that far greater things are claimed for the catalpa than it can ever reach. It is a good tree for its purpose, but it is put on the market now just on the same plane as a patent medicine, and when you say that it is good for everything it is a mistake. In the first place it is not a slender tree. It is naturally a small branching tree. If the plant is given the right kind of cultivation it grows readily. If you plant the tree and give sufficient root space and cut it back to the ground you can get good results. John P. Brown, of the Big Four Railroad, had a patch of the catalpa trees near Brightwood, Indiana. At the end of five years they did not give evidence of doing what was wanted—they grew low and branching. He seemed discouraged, and asked what should be done. I advised him to cut them back. He did so and they came out fine. The entire twenty-five acres were cut back a year ago last March. The first season's growth resulted in straight sprouts ranging in height from ten to twenty-five feet without a branch. A picture of this will appear in my next report, and will show this season's growth. The trees are far ahead of what they were at the end of five years. I am firmly convinced that this is the only way to treat the catalpa.

The statement that the catalpa will last a hundred years I believe is false. There may have been one that did that, but that is not evidence that all of them will do it.

A Delegate: What trees would you suggest to be planted in a wood lot?

Mr. Freeman: If you will plant hickory, and oaks, and other valuable trees you will have a good wood lot. Plant the best commercial hard wood that we have.

Prof. Latta: I would like to ask if a great deal of walnut is not planted and protected in Central Indiana?

Mr. Freeman: Not to my knowledge.

A Delegate: When is the best time for trimming?

Mr. Freeman: My experience has taught me that the time for this is about the middle of June, or after the sap has returned again. After full sap is in. The old law is probably as good as you can get.

Mr. DeVilbiss: Would you plant the nuts in the fall?

Mr. Freeman: Always. Last fall we gathered twenty-seven bushels and put a pile of sand out in the ground. They were subject to the freezing and thawing, and in the spring when they came out they were bursting and swelling. We planted them and in ten days they were through the ground. I have a perfect stand and they are about two feet high, and this is the first season's growth.

Mrs. Johnson: There were quite a number of walnuts sprouted in the garden. Do you think I can re-set them?

Mr. Freeman: Not very well. You would not have very good success if you did.

A Delegate: The acceptable time is in the fall?

Mr. Freeman: Yes, I would advise that.

A Delegate: I set out my catalpas a year ago last fall, and when spring came they were out on the ground. Would that be the same with the walnut?

Mr. Freeman: I think not. Some soils will heave out if there is considerable freezing and thawing. If you plant in the fall plant deeper. I planted some in the fall and planted them rather deep and they did nicely. I would advise planting in the spring, however.

A Delegate: At what age would you commence trimming trees?

Mr. Freeman: I think not before three years.

A Delegate: If you intended to plant walnuts would you put them in the ground this fall?

Mr. Freeman: Yes, I should. The rule is to plant a seed twice as deep as it is thick.

Prof. Latta: Would you plant them where you wanted them to grow?

Mr. Freeman: Yes, sir.

Prof. Weigle: What is the distance apart you advise in planting?

Mr. Freeman: I advise five feet. You may think that is too close, but I think it is all right.

Mr. Scott: Would you advise planting the seed of the catalpa?

Mr. Freeman: I would get the trees of a nurseryman and then transplant them.

Mr. Scott: But isn't there several different species?

Mr. Freeman: Yes, there are four different species, but you are almost sure to get the right kind from a nurseryman.

A Delegate: Would you advise planting catalpas along the roadway to be used as posts?

Mr. Freeman: Not as live posts, I never would do it. I would not give such a thought as this a second consideration. In the first place the trees will not grow in line. One will grow fast and the other will grow slow, and so taking it all in all you will not get good results.

A Delegate: I do not quite understand you. I was thinking of growing them for posts along my line fences.

Mr. Freeman: I thought you meant to leave them standing, and attach the wire while they were alive. I would never consider that.

Mr. Case: Would it be best to set the catalpa or the black locust on sandy ground to make fence posts. Which would be best.

Mr. Freeman: I am of the opinion that the locust would be best because I believe it is a quicker grower and requires less work in order to get the best results. I understand that this is a high, sandy soil. Both would grow well on this soil. Mr. Mayer, of Logansport, planted fifteen thousand black locust trees on his farm last May, and today they will average from ten to twelve feet high. This is a year's growth you might say.

Mrs. Meredith: But grass will grow under the locust tree, and when we live in a good country we can not afford to give much land to forestry.

Mr. Freeman: I think we can.

Mrs. Meredith: Isn't that a point in favor of the locust?

Mr. Freeman: Yes, if we can forget the present idea your idea is a good one. Some think blue grass is worth more than trees.

Mr. Starley: Will these locusts do well on woodlots where they are shaded?

Mr. Freeman: I have not had good success under such conditions. Perhaps the stock tramped them down.

Mr. Lodewick: Would it pay to plant these along our fences?

Mr. Freeman: If we were planting wheat or corn we would think it would be an injustice to both, but it will not hurt grass so much. Perhaps I do not advocate planting trees around over the farm as much as I should, but I think it is better to devote a certain place to them.

Prof. Troop: I would like to ask how much ground you devote to your fences?

Mr. Lodewick: I am in the fruit business and I wanted to plant as a wind break.

Prof. Troop: Your idea is all right if you plant close enough, but you want to plant very close and in single rows.

Mr. DeVilbiss: Would you have to cultivate to make the tree grow?

Mr. Freeman: You are speaking of the black locust? I hardly think so. It is a very hardy tree. I propose, however, to get the sod out of the way and keep it out for the first year. The trees bunch together and you will get body.

Mrs. DeVilbiss: I have noticed that if you plant trees along the fence, especially along the woods fence, they will grow so much more rapidly. The growth is so much faster in the forest area than it is out in the open.

Mrs. Davis: In regard to planting trees along the fence. We have so many vines in our woods, like the poison ivy. We have to contend with that. If we have trees along the fences we can not cultivate them like we could in a clear strip of ground. If we try to cultivate them we get poisoned. I am very fond of shade trees and I think the farmers of today should plant them.

Mr. Lodewick: Isn't the ground richer along the fence than out in the open? In a rail fence line for instance, we have a better nap, and I think this makes it something like new ground.

Prof. Latta: Are the farmers availing themselves of the present law which encourages these woodlots?

Mr. Freeman: The attempt has been good but the results bad. Fifty-seven tried and twenty-three stood the test. This was because of the law. In the first place that law is deficient in that it does not provide for any systematic execution of the law. It is taken advantage of. This can be done every four years. The farmer can cut his tim-

ber this fall if he cares to, and there is no law to get at him. Therefore there is scarcely a timber tract that complies with the law. The Attorney-General interpreted that only such trees as were mentioned in that law could be cut, so the law is a failure. It is unconstitutional. All similar lands should be taxed equally, but it is allowed to stand for the good of the cause.

Prof. Latta: I would like to ask Prof. Roth one question. He has given us a large fund of information but I wish to ask this. In the old country is there any infallible rule as to the number of trees that it is advantageous to keep growing on the acre? Does it vary with different kinds of trees, and with different soils?

Prof. Roth: If you started with an acre on the upper lands. A German forester of fifty years ago would have planted five thousand trees, but he would not have hoped to keep more than five hundred. So you see there must be considerable waste. It is impossible in any kind of a forest to keep the same number of trees. The idea there is always just this. Keep your land and your light all right. The light is the foremost source of the food of the tree. The tree gets its water, and with it a few mineral salts, but that is all it gets. A tree lives just like we do. They can not eat one-half pound or a pound in solution, but they must have prepared food material and that comes to it from the leaves through the agency of light. If we want to nourish the tree from the ground there must be a deep layer of mulch. The leaves of the tree should form the topmost layer of this, and the organic material will be there. This is the kind of condition the forester wants. It was under these conditions that your forests in Indiana are what they are. It is under these conditions that every tree has thrived, and besides this let me add, that these are the only conditions under which a tree will ever thrive well. You may throw poor farm land into woods but there will be a very poor crop of timber. If you want a forest that is a forest, and will be a good forest, you must return to forest conditions, and this is the simple rule. Keep all the trees that the land will stand to utilize the air and soil. Don't let them fight. I must add this, for if you should plant an acre of land with five thousand trees at the end of three or four years at the outside, they will begin to fight. If you should allow them to go for eight or ten years you would have a thicket through which a man could hardly labor. You will find these conditions with the good as well as with the poor, for the poor are constantly getting the water and light that the good ones should have and ought to have. Be sure of this. Do not let them fight.

Prof. Latta: In my mind this is a matter of judgment.

Mr. Van Deman: I would like to say a few words on this subject. I am deeply interested in forests but more deeply interested in orchards. The forests conditions of this country, not only in Indiana, but certainly everywhere, are in a serious condition. And it is certainly not a day's job lost in taking care of these conditions. It is the very best course that a state can take to endeavor to reforest the areas of land that are denuded, and to preserve above all things what we have already. The whole of our industries depend upon a certain normal proportion of forestry area. It is so in all parts of the world and it has been so from time immemorial. It seems to me that it is the disposition of the American people to destroy the last tree that stands before they will begin to plant another. We ought to preserve our woodlots and the State of Indiana ought to take care of them in the most sensible and reasonable manner, and I am certainly pleased to hear that something is being done. I have seen the great barren stretches of pine lands, the blistered, barren portions of Michigan. I have also seen on the Pacific coast sights such as these, and it is enough to make us shed tears to see such places, but perhaps if we should manage these places correctly they would soon be clothed with verdure and with the native forests.

One point was spoken of a short time ago in regard to how many trees should be planted to the acre. I look to what nature does, and nature is certainly a great teacher. I have in mind a region in Virginia, which I noticed when I lived there for a short time, where the prevailing timber is two species of pine. It is astonishing how quickly nature will reforest a barren place. It was so down in Carolina, but more so in Virginia than any place I have ever seen. If you would plant a corn field and a potato field there and let them go for five years, it would be a solid mat of little pine trees just as thick as the hair on a dog's back—just as thick as they could stand. There are millions and billions of pine shoots. They grow not five hundred to the acre, or five thousand to the acre, but about five millions to the acre. You have them there in all stages from the infant to the yearling. These trees gradually die out. They are so thick that some of them must die in order to give the others a chance. It is simply the survival of the fittest. The decayed matter around the roots is a source of the growth of the tree. In the hilly country of Virginia after a heavy rain there will be gullies washed out where you might bury a horse and wagon. Nature will cover these places and they will grow up.

Now in regard to the catalpa I want to say that I think it has been overestimated. It is a good forest tree. It grows well in the lands along the Wabash, on the hills of the Mississippi, etc. I have seen

them two feet thick, but it is only along these alluvial lands that they will attain any such proportions. If they are not attended to correctly they will branch out and take the form of an orchard, and the trees will be almost worthless. The wood is very durable, but its durability has been exaggerated. It has been stated that the old forts that General Harrison built in the southern part of this State—at Vincennes—were made of catalpa posts, but I was fortunate enough to see one of these on exhibit at the State Fair one year, and I said to my friend, Mr. Regan, who was with me, "I don't believe that is a catalpa post." So I took my knife and cut off a piece and it was a mulberry. The catalpa will not last as long as the mulberry.

Mr. Harvey: Must we go into the thickets and clean them out, or allow the undergrowth to develop?

Prof. Roth: I just want to suggest one thing to you folks here and that is this. You folks here in Indiana are most fortunate, and I would suggest that you take under consideration a law, and work for its passage. I believe it would be for the good of Indiana. The state or Pennsylvania tried buying all the poor lands all over the state for not to exceed five dollars per acre and that they put them in charge if the forestry commission. From what I have seen and heard you have made the right plans. You have a Forestry Commission which is perfectly qualified to take charge of the land, and in the end bring great good to the State. Let me say one more word here. Remember always that when your State of Indiana, or any other state, undertakes a thing of this kind, it involves them in a very, very important point and it is just this. When the State of Indiana some day or other has timber to sell, it will not be merely for the stumpage price of timber, but a sum at least double that. We pay a bonus of ten thousand, twenty thousand or fifty thousand dollars to the man who will come in and start a factory. Why do we do that? Because we believe we will have indirect benefit, which will be a benefit to the town. We will not get a cent of the dividends. The people of the town will get to board the men, rent houses, sell goods, etc., and we feel that we can afford to throw that much money away—good money—and why do we do it? Simply because of the indirect benefit we expect to derive. The benefit of the lumber to the State is as this indirect benefit. Every log that can be cut in Indiana is worth fifteen or twenty dollars, but a great deal besides this is this great indirect benefit in that it keeps somebody at work cutting it down, etc., until it is in finished material.

Prof. Latta: If you will permit me to make two or three announcements the meeting will stand adjourned until 7:30 this evening.

I should like to have a Committee on Resolutions to formulate a set of resolutions to set forth to the public the general sentiment of this meeting. We have heard things today that people generally ought to know, without question. It is a meeting of an educational nature, a matter of information as well as education. I will appoint on this committee: Mr. Talbert, of Albion; J. C. Kimmell, of Ligonier, and J. W. Forker, of Kendallville.

I should like for this committee to be ready to report as early as the opening of tomorrow afternoon's session.

We will now stand adjourned until this evening.

TUESDAY EVENING SESSION.

Prof. Latta: The theme for this evening is "Opportunities in Agriculture for Trained Young Men and Women." This is to be presented under three sub-heads—first, "The Need of Special Training for Agricultural Pursuits;" second, "What the Agricultural Colleges Are Doing to Meet This Need," and third, "Opportunities for Those Who Are Specially Trained."

The speaker who is to speak on the first topic is an ex-professor in the University of Michigan of Home Economics, and now has the proud distinction of being one of our Indiana farmers. I take great pleasure in introducing to you Mrs. Virginia C. Meredith, of Cambridge City.

Mrs. Virginia C. Meredith: There is one time when I feel proud, very proud, and it comes once in ten years, and that is when the census taker comes around and says, "What is your occupation?" And I say, "Farmer." And he usually says, "You don't want me to put your name in as a farmer, do you?" I certainly do, for I am a farmer, and I have an opportunity to gratify my pride once in ten years.

I am to talk this evening on "The Need of Special Training for Agricultural Pursuits." I will refer only to those means that could be met by the Agricultural College, as I understand what can be or ought to be done by an Agricultural College. And by agricultural pursuits I am going to include not only those things that have to do with plant and animal life, but I will also include a very important part of agriculture, and that is the home and the farm, and the need for special training for the one who makes that home.

I suppose, like myself, all here are decidedly enthusiastic about forestry. We see great possibilities in this system, and I am sure we have larger and broader views, and certainly a greater fund of knowledge as to that subject. Is there any need for special training in agricultural pursuits? Another way of putting the question is: Are we satisfied with

what the acre is doing for us? Are we satisfied the acre is bringing us its very best returns? Do we think we are getting enough wheat, enough corn; are we getting the quality that we want in apples and pears and peaches and strawberries, and are there enough being raised of these different fruits? Does everyone have as many apples as they want, as many strawberries? Are there any needs along this line? Is the acre doing for us all that it should?

I was very much pleased this evening when I was asked to take a drive around Kendallville. I saw the beautiful streets and homes, and then I saw an onion field where they tell me they will raise nine hundred bushels of onions to the acre. Isn't that a great thing? How many are doing that for the acre? And have we any right to expect it from the acre? Down in our county we had a yield of wheat of from five to seven bushels average. The people are taking five or six acres to raise what ought to be raised on one acre of ground. Who gets the thirty bushels of wheat to the acre? I have a neighbor—a woman farmer—who got thirty-two and one-half bushels to the acre, instead of five or six. How did she get thirty-two and one-half bushels to the acre? Was it luck, or did she make herself a student of seed vitality and the right kind of seed for her soil? I say she got thirty-two and one-half bushels to the acre because she studied the subject of seed vitality and the amount of seed to be sown on her soil. It was not luck. So, then, there is a way of getting over thirty bushels of wheat to the acre. Then there must be special training.

I was in France a few years ago and they were harvesting what I thought was a good crop of wheat, which was an average of fifty bushels to the acre for all of France. Think of that. The average in England, as you know, is something over thirty bushels. Now France and England were old before the United States of America was discovered, so that there must be something in the tending and studying of the soil, vitality of the seed, choice of variety, etc. We need it. If we had it we would not have to own six acres of land in order to get what we should get from one. I think we have a very interesting department resulting from the study of the seed corn in Indiana within the last few years.

I once heard a young man who had spent four years of time and money in a college say that if he had learned nothing else but what he learned about capillarity he would have been well repaid. He had learned it in college, and he had learned it in connection with the cultivation of corn, etc., and in dry seasons he could raise additional bushels. So, we who are not getting sixty or eighty bushels of corn are in need of special training that will enlighten us about the soil, the acre—about the seed and its vitality, and about its cultivation—knowledge of the prin-

ciples, which is special training. What do we mean? Simply this. First to observe accurately and to think correctly, and to draw conclusions with sound judgment. A trained mind is able to do that much more readily than a mind which is not trained. I am particularly interested, and anyone who lives in Indiana must be, in live stock, and yet, what do we find? Cattle, sheep, horses, hogs and everything else that have been bred in Indiana the same for years. There are great possibilities in this line, but yet, how many farmers are there who are equipped with cattle that are fit either for meat or beef; sheep that are fit for mutton; horses that are fit for draft or speed horses. There needs to be special training along these lines, because it is most profitable—the most profitable line of husbandry that can be engaged in. I was very much interested a short time ago to hear a friend of mine say that he raised tomatoes because he found he was able to sell more water in that way than any other way, ninety-five per cent. being water, and that took none of the vitality away from the farm. So in the matter of live stock. We are carrying little fertilizer away from the farm. As you know, there is a deep-seated prejudice against pure-breed cattle, the breeds which we call pure breeds. A pure breed makes a much better butter cow, much better beef. We find any amount of cattle that will lay on perhaps as many pounds as the very best pure breeds, but they haven't the quality which, put on the market, bring high prices, so the profit is lost. So we need special training along these lines.

To illustrate: Opportunities often come to people who have this special training. I want to tell you of a young man who knew how to take care of cattle, and his services were engaged by a rich man on a fine farm, and he was very successful. In a short time the interests of the owner were drifted entirely away from the farm, and he could not dispose of it in the way he wanted to. So this young man got an opportunity to buy the pure-bred cattle at a low price, and this was certainly a great opportunity. This was on account of his special training. I fear we neglect our opportunities. You can read in papers and books where someone will tell how he can put on two hundred pounds of beef, and another four hundred pounds of beef from the acre of grass during the season. This, of course, was done by people who had had special training. These things are interesting, and we live in our own possibilities in this State of Indiana.

I want to tell you about a young man who studied in an agricultural school. He was not so very young, for he was about thirty-five years of age. He found that he was getting a good deal from his experience, because it enabled him to cut double. He did not come with the intention of staying the full time, but when he went home and found how

much he had really learned he went back to the school for the full course, and graduated when he was thirty-eight or nine. That man is now raising every year four or five thousand range lambs, mostly upon rape, which he plants with his corn. He is doing this year after year, and his lambs top the market in Chicago. Isn't this a wonderful use of the acre —that ability to make an acre bring you the very last dollar of profit? This special training gives additional power, and we all need it. Who has money enough? Certainly no farmer. We want more money from our acre. I know a young man who happened to fall heir to some land that was very thin. It was not a very promising place on which to begin farming. He was a graduate, and of course had this special training, so he thought the matter over carefully and found that his land was well adapted to melon raising, so he began to raise melons. He supplied the market with melons and cabbage. In about six years that man had saved enough money to build him a house, and he now has a more comfortable farm. He has a wife who was instructed in domestic science. This man knew that melons would be profitable and could be raised well, and he knew this on account of his special training—the very training which he got from within the agricultural school—for this training gave him an insight into the subject and an enthusiasm for it, and this, backed by advice and counsel of older people, caused him to make a wonderful success. Now many have the acre and many have the special energy that we can put in these different lines. There is so much to be said along this line of the acre, and that is the point from which we should estimate everything we do on the farm—"the acre."

I wish to speak briefly about some other phases of this subject. People are all the time saying that people are discontented on the farm, usually because the women on the farm are not happy and contented. I believe that there is need of special training of the farmers' daughters along these lines. They should be trained along the point of animal life, for that is such a large part of farming. Not that we want the girl to be a farmer, but we want her to be in sympathy with the life on the farm—with the father and brother—and with the husband. She should understand plant and animal life as taught in the classes by teachers of enthusiasm. If this is done she will see so much more in the farm than before. This special training will also aid them in designing houses and barns which are fit for farmers to live in. This is something that will make their lives more comfortable. This is much nicer than being compelled to live in a house which a carpenter will put up for you. The home is the place where the opportunity is given for right development of the physical and spiritual natures, and the

girl who is in school is taught about cookery, about sewing, and the elementary principles of hygiene. The girl who is specially trained will make a better housekeeper, a better wife, a finer woman, and a greater factor in the social life of the country. So, then, we have the greatest need of this special training for women who are going to live in the country. There is a great need of this. There is a great need everywhere. I wonder if you would be shocked if I were to say that I think there is a special need for the training of women to be farmers. I live twelve miles from my father's, and I drive that many, many times in a year, and for six miles on every side of the road every farm is owned by a woman, and only one woman lives on her farm. She is a German woman who was left a widow with several children, and she was enabled by this farm to raise and educate these children. Some of these women who owned these farms longed to live on them, but they didn't know how to manage them. One of the greatest changes which has come to us in the last fifty years has come through the inheritance laws of the United States, which allows a daughter to inherit equally with the sons, and so it has come to pass that girls inherit farms. Sometimes they do not know what to do with them. There are a great many women who never get married for the very best of reasons. May be you don't know what they are. There are not enough good men to go around. This woman would like to live on the farm if they could make things go, and there is no business to my mind so suitable to women as farming. She is removed from competitors. If she undertakes to be a doctor, medical students will not have a woman in the class if they can help themselves. Ministers will not permit women to preach. Men do not want women in the professions, and I for my part, do not want my girl to be a clerk, or do any of the things girls do down town. I would so much rather she would farm, because I know that every good man on a farm will help her if she needs help, and will do it in the very best spirit in the world. We have all seen this many times. If a woman is left a widow every man wants to help her. They do not say: "You shan't farm here in my neighborhood." I know a woman who lives on an eighty-acre farm that has put four children through the University at Bloomington. Wouldn't you rather see your daughter managing a farm, a little one or a big one, than see her working down town? I think it is a fine thing. Since girls can get that sort of an education, why not give it to the girl that wants it?

All along the line I see there is need for special training. We want more from our acre—more dollars. Why? We want the dollars that we may buy culture; that we may buy comfort; that we may exercise philanthropy. The dollar is a beautiful thing when it is correctly used.

Anyone can earn a dollar, but so few know how to spend tnem wisely. So we want more money from our acre; more fruit; better cattle; more butter, more cream, etc. We can do this only by special training. There is no such a thing as luck any more. We used to think that the witches got into the milk and the butter would not come. But since we have got the thermometer we have found that witches did not control the cream. The housewife now knows what she is doing, and the reason for doing what she is doing. She has the special training which gives the reason back of all things, and that gives skill in the art. I think the philosophy of a thing is very important. If we are trained in an agricultural school by a professor who understands what he is doing, we will get the science, art and philosophy, and we will be equipped to live. It is better to learn how to live than to learn how to accumulate dollars. Yet, this special training gives power to get dollars, and the power to use the dollars wisely. I thank you. (Applause.)

Prof. Latta: You will see by reference to the program that we have put down questions after each one of these divisions. We thought the discussion might take this form. Has anyone any questions to ask?

A Delegate: I would like an explanation of how that man raised so many lambs on rape raised in corn?

Mrs. Meredith: I would not like to say that he raised them on rape exclusively. But rape was the principal thing. I know this gentleman quite well, and he has been extremely successful. This fact never occurrd to him until after he went to college. While he was there he saw some lambs being fed on rape, and he took the method back to the farm. So he got this on account of his special training.

A Delegate: I tried rape in my corn once, to my great disgust. My, what a mess there was. You could hardly wade through to cut the corn. If I hadn't had a good hired man he would have left me.

Mrs. Meredith: Why didn't you put the sheep in to mow it down?

Prof. Roth: I would like to ask Mrs. Meredith in regard to her opinion about the isolation of the farm population. Two-thirds of the people of the United States are farmers. It seems to me that we are isolated altogether too much in this country, and I have wondered if this was not the cause of the discontent. In Germany the farms are not so large, and consequently the people are closer together. This makes it more like the village method. I wonder if it isn't likely that we in this country will sooner or later adopt the same method.

Prof. Latta: Doesn't this question give point to your plea for special training?

Mrs. Meredith: I never felt so lonesome in my life, or so homesick as when I was in Germany. I have lived on the farm. It seems to me that there is always plenty to occupy one on the farm, so that they could not feel lonesome. We have so many advantages on the farm. We have good roads, and an ever endless number of good books. We do not feel lonesome, I am sure. There is a class of people, and we know them very well, who have no resource within themselves and are not satisfied unless they are looking out of the window at people passing by. For this class of people farming is not the thing. There is one great need today, and this is that the country school teacher should have a special training. They should be specially taught. I know a girl that is teaching school that was trained in this way, and she is a wonderful teacher. She succeeds in getting the pupils so interested. I know a girl who is teaching a country school, and if you will believe it, they raised her salary five dollars on the month without being asked to. These are the kind of teachers that are needed so much, and in my opinion only the teachers who are trained in agricultural colleges are prepared to teach about the animal and plant life, etc., the very things which the children should know. There is a special need for this kind of teachers.

Mrs. DeVilbiss: I want to say a word about isolation on the farm. I lived in a village once, and I never got so lonesome in my life as then. I have never been in Germany. I could not stop to take my potatoes out in the yard and talk to my neighbor over the back fence while peeling them. We talk about isolation on the farm. I can not see what people mean. We have all the books that have been produced before us for study, and all nature to study, a great opportunity to learn. Why, then, should we get lonesome? We have just as many advantages on the farm as in the city. Pianos are no more expensive, and besides there is a feeling that when you sit down to study you can study. There isn't someone to run in and gossip. When you want your children to study you can have them study; there is nothing to take their attention or to call them away. I was told not long ago by women who live in the city that they did not see how in the world I got so much time to read, for I read more than three or four of them together. The only reason is that I am not bothered by somebody running in and out all the time. So far as isolation on the farm is concerned I have never found it. Never in any way, shape or form, because we always have something interesting to occupy our time.

Prof. Latta: If there is no other questions we will pass on to the second division of this subject, "What Agricultural Colleges Are Doing to Meet This Need," by Prof. H. E. Van Norman, of Purdue University.

Prof. H. E. Van Norman: Mr. Chairman, Ladies and Gentlemen—Before the program began we who were to furnish the major portion of the work this evening were discussing the closeness with which the subjects were related. When Mrs. Meredith began I thought she was really taking a part of my thunder, but before she ended I saw that she had added a great deal.

Will you stop and go back with me to view the requirements which every young lady must have to manage her farm? Do you suppose for one moment that I expect this young woman to go out and drive up the cows and milk them? Pardon my reference to cows, because this is next to my heart, as I manage a dairy. Do you suppose the young lady is to go out and stack the hay or shuck the corn, or do any of the work with her hands? Not for one moment. What must she do? She must be the brains of that farm. She must know the difference between farming of today and tomorrow, and the farming of the last fifty years. The successful farmer is the farmer of now, and there must be a tremendous amount of good, hard gray matter put into the work. There must be brain work, if we succeed. There are not many men who can do a day's work with their hands and a day and a half's work with their heads. So, if we are going to have farming of this kind, it has got to be by means of more headwork, and there is where the college comes in. It furnishes the training which helps a young man or woman to use the head which God has given them. This enables them to make the most out of the facilities which they have. Now, then, how does the college do this? The college training may be divided into these classes: In the first place, it furnishes knowledge of principles. In the next place, it furnishes the knowledge of facts. In the next place it gives a moderate amount of actual practice along certain lines, which tend to clinch and fasten these facts and principles. And finally, it gives that which was talked of in the latter part of Mrs. Meredith's discussion. It takes away isolation. It gives breadth and develops man, and enables him to see the great pleasures which Mrs. DeVilbiss has spoken of. There are a large number of people who feel tremendously that isolation because they haven't that training which Mrs. DeVilbiss evidently has, to get joy out of living. They are only able to count the dollars, and be sorry they do not live somewhere else. Now, knowledge contributes these things in a man's or woman's makeup. Talk about training. I have seen on our campus men who are dressed in a somewhat abbreviated uniform,

running around the campus just as tight as they could run. Why were they doing this? Who were they? They were running their very best. There were eleven of them. It looked to one looking on as if they were playing follow the leader. These men were football men. What were they doing? They were training their wind. They were simply running in order to develop that tremendous lung power which a man must have when he goes into a hard-fought battle and stays in the game and isn't knocked out in the first round when he runs up against his competitor. The man who pounds stone ought to have muscle to pound anything else. There is accumulated strength there. The man who trains his mind to do hard work by thinking out hard problems in algebra, geometry, Latin and Greek is also training his mind for other things. These things are not useless because we do not have them in everyday life. They give us a natural training for other things. How many of you are prepared to sit at a desk for three solid hours and not think of another thing except one problem, and think that problem through to a final, accurate, satisfactory conclusion in view of all the circumstances that are a part of that problem? The majority of you would go crazy if you were to try tomorrow, because most of you are not in practice. Pardon a personal reference, but I have a brother who is rooming with me. He was a freshman last year in college. I have seen that young man sit at his desk on the opposite side of mine, and work at a problem and think of nothing else from seven until eleven. And more than once I have seen him think of just one problem all this time. This he does night after night. Now then, tell me, if you will, whether the concentration and training which he gets in that close application helps him to sit there without getting fidgety and leaning back and stretching, and all these things. Tell me whether or not that training which enables him to sit there and think out those problems will not enable him to sit down and think out perplexing problems in business with a great deal more thoroughness, and more accuracy. This is why some subjects contribute so largely to the student in the agricultural college. In the agricultural school the student is getting just what he needs to know when actually farming. He has the practical application. I remember with what surprise and wonder some of our farm men looked at me when I had charge of the farm work the first summer. There were some young men who wanted to form a perfect square of a certain size for the variety show. They wanted a perfect square, for we take pleasure in having our rows straight, and having everything parallel with the fence. As a man used to say, we wanted things to look as if they had been put there, and did not happen. These young men were having a time to be certain that they had a perfect square. They were measuring

from stakes, etc. I happened to remember that in geometry there was a theorem which said that the sum of the square of two sides is equal to the square of the hypotenuse. We had to prove that in geometry. If you will take a right triangle of which the sides are three, four and five feet, or any multiple of that number, you have laid out a right triangle, and you have one corner of a four-sided parallelogram. It will have to be square as the other sides are all of the same length. When we laid out the square we took twenty, thirty and forty feet, and marked and put stakes there. Of course it came out perfectly square. This was just a little bit of an everyday application of college training to common everyday work. So then, as I think we will have to leave the illustration, our college training contributes largely to our actual work. It contributes a knowledge of fundamental principles. And this is a big thing in agriculture today. A man should understand cause and effect. If you would hang a curtain right here and put a stick through ten feet long anyone would know that if you move this end of the stick this way the other end will move the other way. Now through all the mysteries of farming there are certain underlying principles which are just as true as this little illustration. If this is so something else must be so. It requires a trained mind to know what the cause and what the effect is. You often attribute the effect to the wrong cause, and it takes a long time to find out the cause, which the college gives. Let us take an illustration from the field of which we are pleased in the text books to call Agricultural Physics. Take the soil. A Kansas man studied the soil problem as to why his crops did not get ripe, and he found that it was on account of lack of moisture, and he also believed that there was enough rain fell in the year to raise the crops if he could only save it. He studied the movement of the water through the soil and said to himself. "If I will stir the soil so much water will not evaporate." And he tried it. After three or four years he proved that he was right. He succeeded in conserving enough moisture to ripen his crops. It took him years to prove that. We can take a young man or a young woman three weeks and prove to them accurately and concisely this same principle, and prove it to them conclusively. We would take two cups of soil. Let one bake and keep the other one moist with water. Let one stand and the surface will bake. I should say that when we started this test, both cups of soil were just alike. Let one stand without breaking the surface and it will bake. Take a knife, or sharp stick, or something of the sort, and break up the latter one. It will hold more of the moisture. When you weigh these cups which weighed the same to begin with, you will find that the one with the baked surface does not weigh so much as the other one. I believe in the laboratory last winter this was tried, and it was found that one

of the cans had lost one-half pound and the other one had lost two and one-half pounds. In other words the one with the baked surface had lost five times as much as the other one in a given length of time.

Did you ever try to unite a piece of lamp wick with another piece by pinning them at the bottom? If you did not pin it very tight it would not burn very well. It would not jump over. It is just the same with the soil. The moisture could not jump over. If you keep the soil loose it will not jump over, and therefore the water will remain in the soil. This can be proven in the laboratory conclusively; just how it is, how much it is, and why it is. I might go on with other illustrations, but I will just give one more.

Why does milk sour? There is no one but knows that it does sour. We have experimented with this milk and we find that it sours because something gets into it after it leaves the cow. The milk would keep sweet just as it comes from the cow, but something gets into it—a germ gets into it—and then it sours. These germs are little forms of plant life. They change the sugar of the milk into acid and then you say that the milk is sour. The only way to keep milk from souring is to keep the germs out. Put milk down in some cold place and it will not sour. It would remain a long time before there would be enough germs there to do any harm. We have kept milk sweet twenty-one days. When milk sours one of two things must be true, and that is that it has been too warm, or that it was not kept as clean as it should have been. To keep milk sweet it must be kept clean. When the milk is kept cold the germs cannot multiply, therefore they do not change the milk.

This brings to my mind the point illustrating the application of science. One of my professors once defined science as truth. If you know the science of anything you know the truth about it. Now when we make butter in the creamery—and we make a lot of it—and when milk comes into the creamery that is not over twenty-four hours old that is sour, I know that one of two things is sure, and that is, as I have said, that it either has not been cold enough to keep the bacteria out, or it wasn't kept clean enough. Even if there are a few germs in the milk and it is set in a cold place these little germs cannot do much; they cannot grow very fast. Here is an illustration of the application of college training in commercial practice. You can carry that right onto the farm. The college furnishes the principles and you can make the application in everyday life. It also furnishes a certain amount of practice. The young man who takes work in stock breeding is able to tell the attributes of a perfect beef. He can pick out a perfect animal. We do not learn through our eyes only, but we learn through our eyes and hands; therefore this teaching is supplemented by actual practice. The boys are taken out into

the showing room. The cattle are brought in there. There are a certain number of points for them to notice. For instance they give five for a perfect head; so much for a perfect neck, etc. They will soon learn to pick out the faults. They may see that he is too narrow between the eyes, and cut him a point on that. Little by little they are schooled in these regards until they are able to go out and pick out a perfect animal. When a number of cattle are being judged our boys can put the first three right where the judges will put them. They are thrown in contact with some of the most expert stockmen that we have in the State, and when there are fifty or seventy-five to be judged, our boys will place the first three in their order—in the order that any good judge would put them. They do this because they have not only the theory but the practice. So there is practice in stock judging, corn judging, butter making, etc. All the way along we link theory with practice.

The next point I wish to emphasize is college training. This adds to the power of judgment in life, and I think we live for these things. First, to provide the necessaries of life; and second, to prepare ourselves for the hereafter. So the college training adds something to the dollar and cent side, and also to the power of enjoyment in life, and gives us a better understanding of the hereafter, and a better understanding of nature. I would not dare tell you how old I was before I knew that there were any other birds besides robins and crows. My father and mother did not have the instinct of teachers, to teach and say things about the birds. And yet, as I have ridden out through the country with a friend of mine who is well versed in such things, I have often thought to myself, that he gets more genuine pleasure out of his knowledge of birds than I can express.

I do not know much about pictures. I went to the Chicago World's Fair, and you will remember that there was a tremendous big building devoted to pictures. I walked through every room of that building in less than two hours. I was doing the Art Department. But just as I was going to leave one of the rooms I heard a crowd of people commenting on one of the pictures. I thought that here was my chance to learn something, so I stopped and again looked at this picture. They commented on the lines of expression on that boy's face as he was going away from home, and the look of sorrow on the face of the mother. To me it was just like wiping the dust off of that picture. I learned more in that five minutes about pictures than I have ever learned before or since. And pictures have had a new meaning to me ever since.

There is another phase in this college work. No one can go to a college and mix up with the teachers and the boys and girls without rubbing off just a little of some of the rough corners that stick out. It will polish

you up. It enables one to meet friends with more satisfaction. It does more than that. It gives a host of friends for lifetime. The best friends that most of us make are made during the time we are in college. I see in the audience tonight men who have been to college. Ask them tonight if some of the friends that they are so anxious about, and inquire about, are not college friends. There is a training given here that enables us to grapple with the problems and understand the principles so that we save our strength and not waste it. Then we have a certain amount of practice that clinches it, and makes us broader men, and gives us more of an interest in our life work. Here is an illustration. A young woman came to our college. She wanted to go to school because she wanted to get away from the farm. As I said, she came to our college and got interested in the dairy work. That was one thing that she could do. She went home and told her father that she would take care of the milk and butter. She did so, and is now selling it in Indianapolis. She is getting more pleasure than many a girl that is working in the factory. Of course she has to be there on Sunday, but you can't get anything for nothing. She has good health, and is more independent, and is making more money than lots of girls that are working on salaries.

A young man came to our college to get away from home. He went home to make one of the best farmers in the country. So college training does do these things. Of course we can't accomplish much if we do not have much to work with. It is not every colt that is trained, and bandaged, and fed and slept with that makes the two minute horse. If it is not in the colt you can't get it out. But there isn't a poor old pelter, no matter how stiff and poor, but what if he is bandaged and cared for and slept with will not go a little faster if he doesn't fall down and kill himself. Occasionally one surprises himself at college. The college training is but the commencement to the end. It is not the end. Do not think because a man has been to college he knows all there is to know. There may be a little more in him, but not as much as there ought to be. If a college training isn't worth getting it is not worth having. If you have a son or daughter that wants a college education and you can afford it, it is nice to send them. But I do not think it is always wise to do that. Most anyone can get an education by the time they are thirty-eight or nine years old. I have been through the mill. Many of you have. If a college education is worth having it is worth getting yourself. Earn a little today when you are idle, and save it for after awhile when you may need it worse. When you want a young man to go to agricultural college you must show him the big side of it, the beauties of it. Tell him something that he doesn't know. Show him how to raise live stock and breed cattle, and how to raise corn. Why do they go to college? To get

something into their heads instead of their hands. They will then have a greater interest in the farm.

Mrs. DeVilbiss: One of the strong arguments against the agricultural school is this: If we have a bright boy that we have taught to be a practical farmer upon the farm, and we send him to agricultural college to get an education, we never get him back on the farm. I would like to know what per cent. of the college students that take the four years' course go back to the farm?

Prof. Van Norman: In Indiana I can't give you the exact figures, but we have a very large proportion that go back to the farm. Most of the boys that come, own farms of their own, or are going back to work on their father's farm. I think there were only two men out of nine that graduated last year that did not go back to the farm. One left because he hadn't any farm; and of course didn't have anything to go back to, and so worked for some one, intending to save enough money to get himself a farm. The other one said that he was not needed at home, so he would not settle down immediately, but would travel for a year or two. And out of our short course, it is safe to say that ninety-five per cent. of the men return to the farms. Last year out of a class of eighty we couldn't find five men that wanted a salaried position. In Michigan a great many of the boys left the farms. We have established fifty-nine colleges inside thirty years, and these have to have teachers trained in agricultural schools. Where will you get them if you don't take the men from the farm with a college training? The city man will not do. Is it any disgrace that the man who has this training chooses to take a salaried position instead of coming back to the farm? Perhaps he can make more money out of the position than he could under conditions at home. The records of all agricultural colleges show that a large proportion of the students go into strictly agricultural pursuits. There is no education today that is so broad no matter whether a person intends to be a farmer, a doctor, a lawyer, or an engineer. President Thompson, of the University of Ohio, says that he would advise any person to take an agricultural course no matter what profession he expects to enter, because of the broad foundation given.

The cream of the farm has been leaving it, because the fathers and mothers are running down the farm. They don't see anything in it themselves. They have not seen any of the largeness of the farm, and they need not be surprised when the boys want to leave it to broaden their horizon. Two years ago there were six colleges looking for teachers, and this is pretty tempting when a boy can't get along with his father. These conditions tend to drive boys into the salaried positions. I will go back

to my former statement. A large per cent. of the boys go back to the farms. I expect that Mr. Latta has had twelve or fifteen calls for men within the last six months, and we have not had three men to send. Why? Because they had farms at home and preferred to go there.

Prof. Latta: Out of the senior class of nine men every one went back on the farm except two of the boys, and they did not have farms to go back to, so they worked for other men.

A Delegate: Why is it that the colleges ask only for farmers' boys to attend these colleges? Take the medical schools. They do not ask for just sons of doctors, but they ask for any one. Why don't the other colleges try to get other boys?

Prof. Van Norman: The facts in the case are these. The colleges make no distinction. They cater to the farmer, because they expect to find among one thousand farmers more boys for their colleges than from any other class of men. They do ask for other boys, and I hardly think it right to say that the agricultural colleges ask only for the farmers' sons. We had one boy that came with his father who was in a profession to ask about the school. He asked me what the opportunities were. I told him and they were satisfied. He went to work with a will. I tell you it is surprising because more people do not see the opportunities.

Prof. Hedrick: In answer to the previous question why the boys do not return to the farms. Dr. Benton took occasion to look up the statistics in this regard, in regard to men in different lines. In the University of Michigan he found a large per cent. of our students returned to the farms—a larger per cent. than the percentage of lawyers that were educated in the law course. More boys go back to the farms than doctors remain in practice after they have been educated along this line.

Mrs. DeVilbiss: I would like to ask a question. In taking a boy who has eight years in the common school, four years in the high school, and four in the agricultural school—in each year for nine or ten months—now doesn't that unfit him for the life on the farm? Isn't that too much mental training for his physical training? Don't you think our children on the farm would get more out of six months' training under these conditions than out of eight or ten?

Prof. Van Norman: Well my answer to that is, when we have enough of these people whom you are willing to spare from the farm to furnish enough teachers in the schools, the schools will be so taught as to show the boys and girls the large side of the farm, and during their vacation

they will take home an interest, and will see the farm side of things, instead of running down and complaining of the work. At that time we will have such teachers in the high schools, but we can not have such conditions until we have enough teachers. We can't have these conditions in less than ten years, for it will take ten years to prepare the men. If you think that the boys are getting too much schooling send them up to the University to take the short course. I want to give you an illustration. A young man said to me in Chicago. "Did you see the Berkshire that won the prize?" Now this boy had picked the hog that won the prize, and he told me that he would never have picked that one except for the training he had got at our college. The things he learned there enabled him to pick out the prize winning sow in that show. You all know what this show is. It is the greatest stock show, greatest fat stock show in the world.

Mr. Flick: Do the farmers' girls attend school, and if so, how many go back to the farm?

Prof. Van Norman: I might say that the best student I ever had was a girl. She could do her work better, she mastered the theory, and got the practice better than any man I ever had in a class, and she went back to the farm. She made only one mistake according to my mind, and that was that she didn't marry the best farmer in the class. (Laughter.) I wasn't in the same class.

Mr. Flick: Do the colleges offer any course to girls?

Prof. Van Norman: They offer the same course as to the men. Let me be plain. The Hoosier girls are not quite awake to their opportunities. Only yesterday a girl from new York wrote me that she was coming to take a course in our college, as she was preparing to take charge of the farm that had come to her recently. She comes not on account of the recommendation of a farmer, but upon the recommendation of a college president, who is her uncle. The girls are taught on the same plane as the boys.

Mrs. DeVilbiss: They are offering the dollars to the girls the same as to the boys.

Prof. Latta: The next speaker comes from one of our colleges in a sister state, and when I was there I was proud of it, and said it was the best, but since I am not connected with it now, but connected with another, I am only willing to concede that it is one of the best. Prof. U. P. Hedrick, of the Agricultural College of Michigan, will now speak to you on "Opportunities for Those Who are Specially Trained."

Prof. U. P. Hedrick: Mr. Chairman, Ladies and Gentlemen.—In order that I might give you the facts in the most concise manner possible, I have written them, so I will read my address.

OPPORTUNITIES FOR THOSE WHO ARE SPECIALLY TRAINED.

What are the opportunities for trained men in agriculture? Is the future for such men full or devoid of hope. We all grant that men must be trained for any business or any industry and our question, therefore, should take a turn. We must ask as to the future of agriculture. Is it dead, or at a standstill? Or is it alive, progressive and inspiring? These questions are of prime interest for you and me, for we want to know what is in the future for the occupation in which we have cast our lives.

We are making progress in agriculture. A most wonderful progress. But the mere fact of progress is of little importance unless we can get at the reasons for it and so be enabled to add to the progression. May we not advantageously take stock of our improvements in recent years; then seek for the reasons for their coming; then determine what special training has done for agriculture in the nearby past and what it may do for the occupation and for the man in it in the future.

If in taking account of our many improvements in agriculture we group together and classify, we shall find—

First. That in recent years, agriculture, the cultivation of the soil, has become divided into several special industries. A quarter of a century ago fruit growing, truck farming, dairying, and animal husbandry as special industries did not exist. All were combined under the general head of farming. It is not too much to say that the division has completely revolutionized agriculture, and to its great betterment. Preparation of land, tillage, fertilizing the soil, the handling of breeds of animals and varieties of plants, all are better done now under specialization than formerly.

Second. We shall name as the second most important development of agriculture the great improvement of agricultural implements and the invention of many, many labor-saving devices. Nor need I stop to enumerate to any intelligent audience the innumerable devices and machines that have come to lighten and lessen the labor of the farm. An old writer, who wrote from the farm, exclaims in a burst of enthusiasm: "Blessed be agriculture!" and then adds, with thoughts of the spade, the hoe, the fork, the rake, the scythe, and the sickle, "if one does not have too much of it." Hand tools are now nearly all gone. Machines take their places. We are not now likely to get the old man's "too much of it."

Third. We grow many new types of plants and have many new breeds of animals. I can not discuss them all, but since my work is horticulture permit me to speak briefly of the new types of fruit. Within the memory of middle-aged men, the culture of the raspberry, blackberry, dewberry, gooseberry, and cranberry has come into existence. From one or two sorts of grapes and native pulms half a century ago, we have advanced to as many hundred sorts. So much from the wild fruits of the woods in a half century! What may we expect in the future from others now coming into cultivation? Many foreign plants and fruits have come to us in recent years. Russia, China, and Japan have contributed most. Many of these have proved good in themselves, but their numerous and variable progeny, better adapted to our conditions, promise still greater rewards.

Fourth. There has been a great increase in the number of varieties of our cultivated plants. So great is the number of new sorts that we may say that our fruits, farm crops and vegetables are not those of our fathers. Old people love to tell us that the new products are no better than those of their day. But surely it may be said that they are good, that they serve new and more demands, that they have widened the field of agriculture, and that, in general, the tendency is toward betterment, and that is the main thing.

Fifth. Great progress has been made in the extension of agricultural regions. Corn and all tender plants grow farther north than formerly. Pear culture has become profitable in the south by reason of the Kieffer pear and its related sorts. Munson's grapes have extended grape culture. Peaches are more widely grown than formerly. These, and the extension in the animal industries are so obvious, that the subject needs no further application.

Sixth. Spraying and the treatment of plant diseases have completely revolutionized some phases of agriculture in our day. The potato bug, chinch bug, Hessian fly, the scale insects and other pests threatened the very existence of some crops. We now successfully check all. There is certainty and assurance now where before was chance and luck. We no longer fear the insiduous and often invisible foes that once threatened our industry, and the knowledge and power came at a time when there was fear and dismay to inspire hope and to give courage.

Seventh. We are making great progress in the handling and in the marketing of agricultural produce. This is especially true in such industries as dairying, poultry raising, fruit growing and truck gardening—industries having to do with perishable products. In olden days all such products went to market in bulk, poorly packed, unattractive, and unfit for long transportation. Now there are special package industries. Quick

transportation has brought together the oceans, and, aided by refrigeration, has united the continents. We now have countries for markets where formerly we had counties.

Eighth. The rise of cold storage, canning, preserving, and evaporating establishments makes a market for products that not long since must have gone to waste. In seasons of overproduction, the sales of products prepared by some of the above establishments means profit where otherwise there would have been loss. It would be difficult to say whether the direct products of plant growth or the products of animal life has been most benefited by these new economic uses of agricultural produce. In this connection, special attention should be called to the enormous increase in the kinds and quantities of cereal foods.

Ninth. As the new economic uses just mentioned came into being, new breeds of animals and new varieties of plants spring into existence to serve the new wants. The sciences of animal and of plant breeding have given us products of such a diversity of uses that we are led to expect that all possible wants may be met by new varieties in like manner. No other phase of agriculture gives greater promise to the trained agriculturist than the breeding of plants, and the breeding of animals.

Tenth. The up-to-date agriculturist now studies economics. There has always been too great a margin between the amount received by the producer and the amount paid by the consumer. Organization, market and crop reports, storage and quick transportation facilities have substantially and permanently reduced this margin. The agriculturists have learned well, too, the law of cost of production. They know well that the locality having advantages of soil, climate, transportation and labor over another locality or county can drive the latter out of the markets, and, that for example, it would be folly for a man to grow peaches in Indiana when that fruit can be produced cheaper in Michigan, or corn in Michigan that can be grown, for most part, cheaper in Indiana or Illinois.

Eleventh. And lastly, I may say that many old methods have fallen out of use; and still other improved ones than those above named have become established; and that many, many others are in the process of abandonment or of adoption.

What is the explanation of these mighty changes? How comes it that the giant that tills the soil is thus awakening? Formerly a matter of digging and delving in monotonous routine in connection with farm work and in accordance with rules handed down from generation to generation, agriculture and its several branches are now rounding into resourceful, stable industries founded on businesslike systems and on scientific principles.

Is it not true that a half century ago the tiller of the soil availed himself but little of the advantages of science and of education? There were few or no specially trained agriculturists. And is it not true that at the present time and coincident with the progress in agriculture which I have so briefly sketched, men in all departments of agriculture have seized every advantage to develop their facilities; in short, that the farmer has become conscious of the meaning and value of education? If we contrast our present agriculture with that of a half century ago, shall we not say that the difference is mainly due to the greater influence of science now than then? Brain takes the place of brawn. And when we see how, daily, competition is making the adoption of scientific methods more general than necessary, we shall rightly infer that success in agriculture soon will be impossible without a competent knowledge of the sciences having to do with the industry and without special training in the arts of agriculture.

With this brief glimpse of the achievements of the trained agriculturists in recent years, let us glance for a moment at the means of training now at the command of the farmer and which half a century ago did not exist—means, I believe, which have, in large measure, brought about the marvelous growth which we have been discussing.

At a meeting of the American Pomological Society held just after the war, it was a matter of pride and of rejoicing that there were over a dozen horticultural societies in the Union. Now there are nearly that many national societies in prosperous existence, devoted to horticultural interests alone, nearly a hundred to represent states and geographical districts, while local organizations run well up toward a thousand. I take it that societies have multiplied and thrived in all the special industries of agriculture just as they have in horticulture.

Within a half century fifty or more agricultural colleges and nearly as many experiment stations have been founded and the sentiment among farmers has changed from sneering derision and half-hearted toleration to hearty and loyal support. Within the same length of time, the United States Department of Agriculture has risen from a Bureau for the distribution of congressional favors to a mighty power for good in agricultural work.

More agricultural books have been written in the past decade—good ones, too—than in any century preceding. Agricultural papers have increased enormously in numbers and in usefulness.

The farmers' institute is still an infant—scarcely in its teens—but it is a goodly child, and, fed by popular sentiment, is growing and is now a tower of strength to agriculture.

I can but mention other forces, as the Grange, Farmers' Clubs, Home

Reading Courses, University Extension Work, and Nature Study. Nearly all of these are of recent growth and all have been a means of training and of education to the farmer.

I thus set before you the facts as to what training has done in the immediate past as the best means of illustrating what the opportunities are for those who are now thinking of training themselves for agriculture. I want also to hush up any statement or any thought "that education for the farmer is all bosh," as we sometimes hear from those who have mighty little or none of it. And now, with your minds filled with the achievements and facts of education and training, I want to briefly discuss the methods and needs of agricultural training.

Scarcely any two men agree as to how the farmer's son or the farmer himself should be educated. If we suppose that the training is to be given at an agricultural college, one man says that such a school should teach practical agriculture—how to plow, till, prune, milk, bind, and mow—to earn one's bread by the sweat of the brow. A second wants a school of science to teach botany, chemistry and the like. One wants the school to support itself. Another insists that it should not compete with the farmer in selling produce and should therefore be endowed. A third wants an experimental farm and a fourth says the model farm is the thing.

The divergencies arise, in the main, however, from two points of view, namely as to whether the advocate favors the science the most or gives his preference to the art of farming. We come now to a discussion of these two issues.

The difference between erudition, that is, mere book learning, and true education, is nowhere better illustrated than in the study of agriculture. "Erudition," says Herbert Spencer, "is knowledge gained from books. Education is erudition put in action—is knowledge plus practice." Now the student of agriculture, in college or out, should seek not alone the knowledge in the books, and not alone practice in the field, but both. Head and hands must be developed together. Only when practice is thus joined to the science can the highest results be attained.

What can the farmer get from books? What should science teach him? Not facts alone, for in themselves they are worth but little. We memorize them and then forget them. Moreover, we tire of them and facts awaken in us no interest nor enthusiasm, and they often create dislike where should be delight and pleasure. No, science and the books should give us principles and we should then learn how to apply them. We should learn why we till; why we prune; how plants feed; the laws of plant and animal breeding; the influence of climate, of environment, the evolution of plants and animals. Give dignity and respect to agriculture

by making it a science. Let the scientific spirit permeate our occupation.

Such training in agriculture should make a man more of a man; should deepen and broaden his intellect; should open his eyes; should enkindle enthusiasm; should teach habits of thought, of observation and investigation; it should give him greater mental stature, for the mind, like the body, grows with exercise. It should make him more accurate in his judgment, more cautious in generalization, more self-reliant, and more alert and fruitful in his investigations.

Coming to agriculture as an art, we find that many take the wrong view. They consider the best training in agriculture to be apprentice work. Now, apprenticeship, so the great teacher tells us, does not truly educate a man. The master says, "do so and so; the rule is such and such; believe and ask no questions." This begets an attitude of submission to dogmatic teaching. It puts rule, authority, and personal experience ahead of inquiry, reason and science. The apprentice is not often a student, and he is apt to be narrow, opinionated, selfish, unprogressive and to lack self-reliance. The apprentice seldom learns how to use time well. He works his ten hours; after supper he lights his pipe and goes to town. He throws away golden hours that the true student would spend with books and plants.

No, the training in agriculture should not be that which the apprentice gets. It should be such that mind and hand are trained. It is well said that "The man who relies solely on his hands is a beast of burden." We should expect that the apprentice could set more grafts, plow more acres, cut more grain, and turn a straighter furrow, but we should want a well trained man to manage a farm. No, mere skill with the hands is not the great thing in agricultural education. It is of far less importance than inspiration, interest, enthusiasm and the will to work.

I have not yet specifically mentioned the opportunities for men trained for agricultural work. Now, shall I do so? Opportunities innumerable lie along the lines in which we are now making progress, and which we have discussed somewhat. Agriculture is growing through the work of trained men. It is impossible to state where and when an opportunity may be seized. It is beyond the power of man to tell what proportion agriculture is to assume in the future, or in what direction it is to develop most. We are safe, it seems to me, in saying that the impetus to agriculture we are now feeling is but the beginning and that the next fifty years will show even greater changes than we have seen in the past half century.

Possibly it may be well to point out some of the phases of agricultural work which seems prominent and promising at the present time for those

who seek an active and earnest career in agriculture. I do not wish to unduly emphasize the horticultural posibilities in agriculture, but I know you will pardon my calling special attention to the commanding and growing importance of fruit growing, truck farming, floriculture, and landscape gardening. One needs only to compare the last available statistics of these industries with those of any previous period to realize the growth being made and the opportunities they offer. It is the same, I know, with dairying, animal husbandry, poultry raising, and general farming. For those lacking capital to start a business of their own, and inclining toward the professions in agriculture, if we may so call them, the agricultural colleges, the experiment stations, the United States Department of Agriculture, and the agricultural press are all seeking trained men. Those of us having to do with these phases of agriculture know that the supply is nowhere equal to the demand. I know now of seven vacant college and station positions in horticulture, and three places in the United States Department of Agriculture, paying from $600 to $1,800 per annum, and it is doubtful if men of the right quality can be found to fill them. The lack is not in opportunities, but in men well enough trained to take advantage of existing opportunities.

Will it pay to train oneself for a career in agriculture? Will selling merchandise pay? Will preaching pay? You answer at once that it depends on the man. And so with the man with special training in agriculture. A man with the three I's, intelligence, industry and interest, will find that it pays to train himself in agriculture. The man without these, and with but little of the art of agriculture and but a smattering of the science, can hardly make it pay. Above all, a lazy man, or the man who thinks his training is the "whole thing," can not make it pay. To succeed, the trained man must be a worker. He must remember that always "the weakest goes to the wall," and that, as in other industries, one "must fish, cut bait, or get ashore." Again, he must be in earnest, and must be in love with his work.

> "No profit grows where no pleasure is ta'en,"
> And "the labor we delight in physics pain."

The trained men with these qualifications can more than make agriculture pay.

But there is more than money in the career of the trained agriculturist. There is, or should be, much pleasure in it. I can not conceive of a more pleasant vocation, for instance, than that of the plant breeder. He turns sour and bitter fruits into sweet; he makes hard fruits soft; he changes the natural green of the wild fruit to crimson and gold; he makes two plants grow in the field where one grew before; he

takes the thorns from the rose and the berry bushes; he doubles the pink, increases the fragrance of the violet, and adds color to the daffodil. Moreover, he is a true benefactor, for with his magic he brings forth new types and new varieties and gives to the laborer of these days comforts which a king could not have purchased a century ago. The men who make silks and paint pictures put their wares in the palaces and cathedrals. Few there be that see them. The man who creates new fruits and flowers, calls to the weary throng, "Whosoever will may come," to be refreshed and cheered.

Then, too, there is much for the moral life in agriculture. More than in any other industry a man puts his mind and soul into his handiwork, and materializes them into plants and fruits and flowers. Growing things give a charm to the home and keep a man there. They fill one with gladness and there is small place in the wholesome life of the farmer for the devil to hatch his evil brood of anarchy, thievery, jobbery and meanness. The Almighty made the first man perfect, and set him to tend the garden. After Adam had consorted with Eve and the serpent, and had sinned and fallen, he quit our profession and turned builder. Growing plants bring us in touch with goodness and beauty and set our thoughts in accord with true and noble things.

In closing, I want to say just a word in regard to our agricultural colleges. I shall not say much or go into details, for I realize that for most of you, college days are past. Neither do I want to seem to disparage other means of agricultural training by dwelling on college courses. I only want to say that our agricultural colleges stand for the improvement of agriculture, and the making of men through education. The Michigan Agricultural College, and your own institution, I am sure, name with pride trained agriculturists who have attained distinction in the State or Nation. Out of the right stuff the agricultural colleges can make the best of agriculturists. They can make men, too. Manhood first, livelihood second.

(Applause.)

Prof. Latta: We are now ready for any questions that you may wish to ask.

Mrs. Meredith: I would like to say a word in regard to how special training touches so many phases of life in town. A young man in Chicago who has charge of the boys sent from the Works—they are taken away from their home—is helping them in their work, and is having them work with plants, digging the ground, etc. That young man is a good Christian young man, but the training that he had in an agricultural college, in the horticultural department, is the thing that gives

him the power to influence the boys. I want to say here also that a number of reformatories for women are finding that if they want to do the bad women any good they must get them out of doors away from the prison walls, out in the fields, and they are taking them out in the fields and letting them dig with their hands. There have been calls again for women to take charge of such as these. So you can see how this education touches all phases of life and is a refining principle. That is an important thing.

I want to speak of securing positions. I know a number of places where women with training can take positions as supervisors. These positions are open for trained men and women.

Mr. Williams: I would like to ask one question. I would like to know what the direct influence of the agricultural colleges are upon the general agriculture of the country, both directly and through agricultural papers or bulletins. How much benefit are we deriving from them when we are not directly connected with colleges?

Prof. Hedrick: This is a hard question to answer. It is my opinion that the agricultural colleges have been the chief factor for the last fifty years in the wonderful progress that agriculture has made. That is about as near as I can answer the question. Think of the books that have been written, experiments that have been carried on and the work that has been done in the departments of agriculture—all along progressive lines—and it has been done by men educated in agricultural colleges. I think you will say that my statement is not too broad. I believe the work done by the agricultural colleges is the strongest force that is moving agriculture forward at the present time. There are many things that I might mention here, but time will not permit.

Mr. Williams: To what extent are these agricultural teachings permeating the country?

Prof. Hedrick: I am sure agricultural education is finding lodgment in every nook and corner of the land. In one way or another it reaches almost every farmer in the land, if not every farmer.

Prof. Van Norman: I want to say another word on this question. Of course we always discuss the father's place and the boys' and girls' place, and that is the way with you people. I want to say this, leaving out for the moment the experiment station side of it. There was a young man graduated in the college just before I did, and he went back to the farm. He came back to the college one day and the professors asked him how he was getting along. He said that he was getting along all right, but that since he had been to college all the neighbors asked

what they should do about things. They consulted him about everything. This was pretty big for a young man of twenty-one. This simply goes to show how much the community expects of a young man who has had the opportunity to finish in an agricultural school. Not long since I learned that he was now a member of the Legislature.

Right in our own State a young man from our college cured thirty-two cases of milk fever among milch cows. This is one of the most dreaded diseases. It took training and common sense to do things of this kind. Look at all of the experiments and tests that have been worked out. They are one of the commercial results of education in agricultural schools. I know a man that went on a farm at a salary of four thousand dollars He increased the value of the productions on the farm the first year over seven thousand dollars. Of course it was a large farm. And he was a man of large ability. It was simply his college training that put him into this.

Mrs. Meredith spoke of the folks that were leaving the farm. Look at men like Joe Burton who has apples and pears when other men fail. He sprays. He uses his head along with his hands. Look at Morrell, the peach man. He carefully cultivated the ground, took every weed out, cut every branch, so when the frosts came a few years ago and the peach crop was ruined, he had a good crop. Why? Because he had thoroughly studied the matter. He did not have an extra branch to be supported, or a twig to take the nourishment and the vitality, and it had enough vitality to stand what the others couldn't. Look at the men who take the cattle to Chicago. There are thousands of men feeding steers over the country, but they do not turn out such steers as Carrick does. Take the cream at my own dairy. I have used cream seven days old. This was because we understood how to handle the milk. We averaged more than twice what the usual average is. Take the boys and girls that want to teach in the district schools. I will go tomorrow to a teachers' institute and deliver a lecture on "The Country School and its Relation to Farm Life." Suppose that superintendent turns around and says: "We want a young man like that for our high school. Where can we get one?" I could not tell him where. One of our teachers was asked the same question last week. We have the apparatus. What we want is the men and women. Such people as these are needed anywhere on the farm.

Prof. Latta: We do not want to hear any more from our college people until we have heard from the others.

Mr. DeVilbiss: I never went to college an hour in my life. But I want to say that I see the benefits of a college education. Mr. Van Deman

has told us how we learn so much. I come to the Farmers' Institutes to learn something, and then go home and practice it. We have sixty thousand people in Allen County, and sometimes we have only sixty in some of these meetings. Do we get any benefit? Certainly. Twenty years ago we raised twenty bushels of corn. Now we average forty. What is the cause? Agricultural education. By what? People going to agricultural institutes, hear what the different men have to say, go home and try it, and the man who doesn't go to the institute looks over the fence and copies how it is done. This is like bread cast upon the water. It will return in large quantities.

Prof. Van Deman: It is certainly a fact that is being recognized all over the country, that the man who tills the soil has one of the most elevated callings in the world. I think it is the most elevated calling. And should we go into a life work like this without training, without a special education, and a special preparation? It is unreasonable to think of such a thing. I had to get what I know by digging it right out of the soil, and getting what I could out of books. We are glad you are working on this great subject of getting the best results out of the country life. Certainly we have a wonderful problem.

Now I remember two cases that are in point in this general discussion with regard to the knowledge which one will have by having an agricultural education. When I was teaching in Kansas, in the agricultural college there in the 70's there was a certain young man in the class, we had thirty-five young men and women in the same class. There was one young man whose aim was to be a lawyer, and after three or four days he came to me after the close of the day and said, "Professor, I wish you would excuse me from taking those lectures in practical horticulture. You know I wish to be a lawyer." I told him that I knew that. He went on and said, "I feel that I am wasting my time and that I do not need these lectures." I said to him, "Mr. Wood, don't you expect to have a home some day when you are through college, and are a lawyer living in town?" He said, "Yes, I am very likely to." I said, "If you are going to have a home you want to know how to beautify that home, and to take care of it, and you need this training." Well that was a new thought to him, and so I told him to come back in a week and talk to me. In two or three days he was back in the classroom, and he told me that he didn't have any more to say.

There was a young lady in the class taking a course, in fact there were quite a number of young ladies in that class, and among other things we were taking grafting. They took it along with the rest of the class. Several years after this at one of our institutes I met one of these young ladies and she said to me, "I suppose you never thought I

would ever make any use of that grafting, but I have and I would not have missed it for anything." They thought this practical information had been of great benefit to them. Of course grafting was only one of the many things that were taught during the term.

I certainly think it is a very proper thing for everyone to have a good, thorough training at some agricultural college.

Mr. Widney: I would like to add one word in regard to the practical part of the bulletins that are sent out from the station. It was my misfortune not to have the opportunity to go to college, and to get a college education, but I consider that from these bulletins I have had an opportunity which is about equal to that given by a correspondence school. From these I have gained a great deal. There are several modes of education, and one is practical experience. I would like to say to those who are starting out in the horticultural world, that to me practical experience has been the most expensive thing I have ever had. I would also say to anyone who is considering going into this line, by all means commence at some agricultural college, and get the benefit of the experience of others.

There is one thing I wish to say about Mr. Morrell's peach orchard. Some of my friends are here. I started out in the fruit culture on that line. I believe if there was any man proud I was over my orchard five or six years ago. I hoed it once a week regularly as clockwork. Along came a hard winter. I had gone to the extreme. My next experience was digging out those plum trees and throwing them over back of the barn. This was extreme cultivation carried to an extreme. We admit we went too far. We cultivated them to the very best of our ability, and so I advise anyone who is thinking of doing this class of work, to go to school. I would have been dollars ahead if I had shut up and quit business and gone to an agricultural school.

Mr. Van Norman: A man in doing this class of work must have all the conditions right. This man had the other training that went with it. There are so many of these conditions that must be handled together it takes such a big head to get them all right at the same time.

Prof. Latta: We have a great many young men and women in our college but we can't prepare them fast enough to meet the demand that will grow rapidly in the near future. Mark it if it does not fall true.

Now I thought it best not to diverge from the main line to answer Mr. Stanley's question, but we will come to his question when we are talking of strawberries tomorrow. Tomorrow morning we will give the entire session to the strawberry unless we finish it in less time. The afternoon will be devoted to the apple. Please bear this in mind, as they are practical subjects by practical men of intensely practical means.

WEDNESDAY MORNING SESSION.

Prof. Latta: The hour has come for calling this meeting together. I will ask Mr. Talbert, of Albion, to lead us in the invocation. The audience will please stand during the prayer.

Rev. Talbert: Our dear Heavenly Father, we come before thy presence this morning to invoke thy blessing upon us. We thank thee for those present here this morning, and for the meeting that has been in progress here, and we pray that thy blessings may rest upon us. We are conscious that we need thy help, for we have learned that every good and perfect gift cometh from above, and is from the Father of Life. We pray thee that thou wilt give us wisdom in the work that is before us, that we may better our conditions and the conditions of mankind in general. Bless the officers of this meeting, and those who have it under their direction. We pray that the influence may go out over the entire State of Indiana, that the influence of this meeting may be carried from one side of the State to the other, and that an interest may be awakened all over this great State of Indiana along the lines of agriculture and horticulture. We pray that thy blessings may rest upon the meeting, upon the speakers, and upon this entire town and vicinity. God grant that thy blessings may rest upon all of us. All this we ask, for Christ's sake. Amen.

Prof. Latta: It is not very inspiring for a speaker to address a handful of people, but I want to remind the speakers who are on duty this morning, and especially the one who is to open, that we are reminded of the words of the bible: "Ye are the salt of the earth; ye are the light of the world." And it is a common expression of mine at our institutes when we gather there with a handful of people and there ought to be one or two hundred, or more, I simply say, "Friends, here is the salt of the earth, so we will begin." We must not feel discouraged over such things, although we can not help feeling disappointed that there are so many not here that might be here to their own profit, and to our mutual good. So I would have the speaker remember that he is talking to the leaders, who will think, and apply reasons. Take courage; be of good cheer. I learned years ago in this institute work not to be discouraged. I am often disappointed, but not discouraged, because if one will permit it, it is easy to find occasion for discouragement, and to sit down and say, "I will not try any longer." This is a good work, and we are co-operating with the farmer, and good will come from every good work and every good word. You may rest as sure of it as that the sun is shining. We must have faith in the ultimate outcome of our work.

We will take so much of the morning as may be necessary for the discussion of the strawberry, and after we have disposed of that subject we will perhaps have a medley of subjects which will be of interest to the practical fruit grower, toward the close of this session. The first subject this morning is "The Methods of Planting and Culture," by Mr. Grossman, a practical fruit grower, whom most of you know. Please remember that we have an opportunity for an informal discussion, so please follow closely so that you may contribute your mite of experience when he is through.

J. C. Grossman: Mr. Chairman.—Rather than being embarrassed I am congratulating myself that there is not a larger crowd here than there is, for I was placed on this program against my express wish. I have been called upon so many times to speak before the same audience that almost everyone has heard me over and over again. I can't tell anything very new, but nevertheless I will occupy a portion of the time, but not the twenty minutes allotted to me. It will not take me that long to tell what I have to say.

Mr. Van Deman told you yesterday that the strawberry could be grown on any of the cultivated soils in the United States, and I believe that this is true. There is not a place in the United States where a crop can not be cultivated and grown but where the strawberry can be grown, more or less successfully. That success will depend to a great extent upon the man, the individual, and his methods of caring for his strawberries. Now before taking up the methods of planting and culture, the first thing we want to think about is the soil, and the preparation of the soil. I always endeavor, and I would endeavor if I had a large farm, to select a soil that could be easily worked and easily kept in good culture, and rich. There is quite a difference in soils. I have been accustomed to working in a sandy loam, and never have worked in a clay soil, so I would not understand it. A gentleman here has it, and he no doubt will take up the discussion of this and tell us about his methods.

I have the land well fertilized, put on a heavy coat of manure in the fall, possibly before the ground freezes. This soil or land should be cultivated years previous to this planting. I prefer to have some green crop on the land, in the fall, and cover it with manure. This makes it easy to cultivate and makes it fertile. I plow deep, but not deep enough to turn up a heavy coat of subsoil, but down to that, and it has also been my custom to cultivate thoroughly before planting. I drag the ground, and then harrow it, lapping one-half. I harrow it five or six times, or eight if necessary. I get the ground thoroughly fine and compact, and usually leave it stand two or three days, and possibly a week

on account of the moisture. The ground was unusually dry this spring and we could not get to work early on account of the late spring. I worked in the field until the first of June, but I was careful to get the ground thoroughly fine, and compact. There was not a clod to be found. Under these conditions I can control the weeds. There is not a weed to be found in the patch at the present time, and I have not done any cultivating except yesterday for three or four weeks, and I could carry in my hand all there was in the patch. I prefer long, straight rows, therefore we make them long and straight, so we can hoe them, and we make the rows the same distance apart so that we will not have to change the cultivator in turning into the next row. And if you have an awkward horse he will not step on so many plants. Therefore I am careful in that respect.

I do not plant strawberries on a large scale, so my methods will not answer for the person that wishes to plant on a large scale. That would not do if you were rushed. My methods could not be used if you were planting five or six acres. You would have to use quicker methods than I do. I mark out a line perfectly true, and have a wedge-shaped spade made for the purpose. This leaves a wedge-shaped hole that is narrow at the bottom, and does not leave any air space. I am careful to spread the roots out fan shape, and not leave an air space at the bottom. Of course it takes longer than some take in setting plants, but I haven't the ground to plant very extensively, and I have time to get all my plants planted very carefully and easily, so I use this method. My average is usually about one acre, and sometimes one-half acre. But I have the satisfaction of knowing after the plants are set, that I will have a stand, and a good stand if the plants are in good condition when I set them out. I aim to have the plants fresh, if possible, and take one plant at a time, and put it in, and put in the dry dirt, and this fresh dirt when watered will lay up against the roots, and make it compact around the roots, and I have no trouble in having plants to live. I put about a quart of water about each plant. If I have the soil soaked thoroughly and dry upon the surface, I do not care for a dry season. My plants will stand it all right.

Of course there are other methods of setting plants. There is one method that is possibly better, but I have not tried it. It sounds very reasonable. That is of using the method that Mr. Kellogg recommends. He has a "litter." It is a cone-shaped affair that he uses. I ordered one of these instruments once, but never got it.

Prof. Troop: I have one, but I never use it. They are not practical. Mr. Kellogg states that he does not manufacture them any more.

Mr. Grossman: I never did use one, and I never saw one used, but I think that one of my neighbors has one. I have intended to go over and see him use it, but I did not have time to investigate it. There is another method that I think is quicker. A spade of the natural length is used, and a short handle is attached, so that the person can set ahead of himself. The handle should be about ten or twelve inches long, then you can set ahead. There are four systems of planting. The hill system is very good. I have heard people who used to use that method say that they had abandoned it, for the reason that the plants would heave in the winter time. In planting by the hill system they usually plant about two and one-half, or two feet apart, or you can plant eighteen inches and have the rows farther apart, but the usual method is to plant in the hill and cultivate both ways.

Prof. Latta: Is that your method?

Mr. Grossman: No, it is not my method. I never used it. The hedge row system is the system that is recommended by a great number of people in this vicinity. This is one of the best methods if you have time to do the work. It takes more work than the others, because you have to keep the runners off during the summer. The rows should be from thirty inches to thirty-two, to three feet, according to the wish, but if you have them two and one-half feet, and then plant the hills two and one-half feet each way, you can cultivate both ways. This system is used here by several growers.

Prof. Latta: I believe we would be better served if you would stick pretty close to what you do, with the reasons, and let the other fellow tell his way. This is on the ground of actual experience. Make this as strong as you can on your own experience. I want to bring out your experience.

Mr. Grossman: Well, I propose to set the plants thirty inches, or three feet apart, and I keep the runners off until the first of July in order to get a strong growth of the plants. If I get busy of course I allow them to take their own course, but I take off a portion of the runners when they get too thick. I have succeeded in getting good berries in this way, and plenty of them. I succeed better than with the hedge row. I get a good quality of berries, and I find that it is less work and the expense is much less. I can get a good crop of berries much cheaper than by any other method, and while by the other method they have larger berries, our market is not such that we can get an advance in price for the difference in the quality.

Now I wish to speak of the culture. I begin to cultivate these plants

the minute I get through setting them. If I am delayed so as not to finish the patch in one day, I cultivate the patch that is already set, and I cultivate it after every shower. If we do not get a shower, I cultivate every week anyhow. I hoe them before the weeds can be seen. I am very careful to pick out the weeds from the sides of the plant, and not let them get started. I am keeping my patch thoroughly clean, and when the runners begin to run I have gotten rid of most of the weeds and the soil is loose and the runners can take hold. We have had a very severe drought this summer. Recently we had a rain and they are beginning to root now. The patch is clean so we will not have very much more trouble this fall.

I want to emphasize the necessity of cultivating often and thoroughly before the weeds show up. And I have learned a lesson this summer, which I have known before, but it has been most thoroughly impressed on my mind, and that is that by thorough and frequent cultivation when it is dry, you can keep the moisture in the ground. When you go out in the patch of a morning you can see by your foot tracks that there is moisture there, and when you kick the dust away you can see the moist dirt.

Prof. Latta: By frequent cultivation in a dry time do you mean once a week or oftener?

Mr. Grossman: Oftener would be better, but once a week if you have good, fine mulch will probably answer the purpose. I believe this is all I have to say.

Prof. Latta: We would like to hear from any one who has anything to add to this important subject.

Mr. DeVilbiss: I would like to ask what you use to mulch your berries?

Mr. Grossman: I use rye straw or wheat straw.

Mr. DeVilbiss: Can you get the straw without the timothy seed in it?

Mr. Grossman: No, I have trouble with the timothy seed, but that is the best I can do so I have to take it. I prefer the rye straw.

Mr. DeVilbiss: Why do you prefer the rye straw?

Mr. Grossman: It is better, cleaner, tougher, and will hold better through the picking season when the pickers are working, when the wheat straw will rot and get very short. The rye straw will stay cleaner, and will keep its length, and it is nicer for the pickers to work on.

Mr. DeVilbiss: Do you consider it a detriment for the wheat straw to break up and get fine?

Mr. Grossman: No, but it does not mulch the berries as well when it breaks up. The berries keep cleaner than they will with wheat straw that is all broken up.

Mrs. DeVilbiss: What kind of instrument do you use to cultivate your plants?

Mr. Grossman: I have been using a Planet Junior. But I prefer for the first cultivation a five tooth cultivator, and cultivate it deep before the roots begin leading out. The fine teeth will smooth it down. While I am not advertising cultivators I like the Osborne. It is short coupled, and is shorter than the Planet Junior, and is not so far from the horse. It is solid, and yet light. You do not have to be so far away from the horse, and you can turn much easier than with other cultivators and it works better.

Mrs. DeVilbiss: Do you trim the roots before you set them out?

Mr. Grossman: Yes, I always trim the tops and the roots. I take what I can hold in my hand, which would be about three or four inches, and cut all the top off above my hand.

Mrs. DeVilbiss: Then you never take off all the top?

Mr. Grossman: I never leave but two or three leaves, and if it is dry and the plats are large I trim down to two leaves.

Mr. DeVilbiss: Do you ever puddle the roots?

Mr. Grossman: No.

Mr. Williams: Do you ever try using the hoe in your soil?

Mr. Grossman: No.

Mr. Latta: Did you state when you do this mulching, whether before or after freezing?

Mr. Grossman: I did not state that, but I prefer to do it after the first freeze, when I can drive across the patch with the wagon and not cut the ground. This is usually about the first of December with us. I am fortunate if I get the material to mulch with this year, for I fear it will be almost impossible unless I get marsh hay at five dollars a ton.

Mr. DeVilbiss: Do you ever use shredded fodder?

Mr. Grossman: I have tried it and it was excellent.

Mr. Latta: Do you ever have any trouble with heaving on this land?

Mr. Grossman: No, sir.

Prof. Latta: Do you find a difference in the heaving among the different varieties?

Mr. Grossman: Yes, sir; there is a difference. I have not paid much attention, because I have not had much experience along this line.

Mr. Williams: Do you ever set plants at this season of the year?

Mr. Grossman: Yes, sir.

Prof. Troop: What is your success?

Mr. Grossman: Very poor.

Prof. Troop: Why?

Mr. Grossman: I think the trouble is I do not have time to give them the attention that they should have at this season of the year. And possibly the ground is too dry.

Prof. Troop: Can you get a good, well rooted plant by setting them out this season of the year?

Mr. Grossman: Not very.

Mr. Flick: How about the potted plants?

Mr. Grossman: I tried potted plants a few years ago, but I didn't succeed at that time, but I tried again and gave them more attention and I had good success. I kept the plants in the shade before the first of August, and I had the biggest crop the next year I ever had. Probably I was more successful because I had studied handling the plant and gave more attention to the work, and didn't have other business on my mind to look after. I have no leisure at the present time so I have dropped that method.

Prof. Troop: I would like to ask one question, as to whether or not this is not a good time to set plants so as to get a part of a crop next year at any rate. At this season of the year they get close attention and plenty of water.

Mr. Grossman: If they do not get that it is better not to set them. I think I would be interested in hearing Mr. Feebles.

Prof. Latta: Yes, we would like to hear of Mr. Feebles' experience on clay soils, if you please. We would like to hear the points of difference.

Mr. Feebles: I have had some experience on clay land. It is not exactly clay soil either, for it varies some. It varies from knobs down to nice, rich soil, and the plants grow ranker down on the rich soil. If the upper soil is manured a great deal it will raise good berries. But, if I were picking soils I would pick one with more sand in it. I know clay works harder, is harder to handle, is harder to get ready in the spring, and is a little more wet in the spring, breaks up in clods and does not work as nice and the plants are harder to handle, but it holds moisture well, and if there is rain just before the berries are ripe, it holds it well.

Prof. Latta: Would fall breaking be advantageous to the clay portions or not?

Mr. Feebles: I do not think it would, for it would settle together and get hard. If you plow in the spring at just the right time, it gets nice, but you have to learn how to handle it.

Prof. Latta: If you have both kinds of soil do you find any difference in the methods you use for the two kinds? Do you handle the clay just the same as the formation on the slope?

Mr. Feebles: Yes, I plow over all the place, and go over all at the same time, but the plants grow larger of course, on the rich soil.

Mr. DeVilbiss: The berries are not quite so sweet. They will not bring as good a price in the market, will they?

Mr. Feebles: I think they are not quite as sweet.

Mr. Swaim: Have you made a discrimination in the varieties you plant in the different places?

Mr. Feebles: No, sir.

Mr. Van Deman: Which ripens first, the clay or the low land?

Mr. Feebles: The clay.

Mr. Van Deman: Several days?

Mr. Feebles: No, there is not much difference in time.

Prof. Latta: Is your method like the method of Mr. Grossman?

Mr. Feebles: It is very near the same.

Mr. DeVilbiss: Has your soil been washed off a little?

Mr. Feebles: Well in clay spots there is not much sand. There is sand in all this soil, but where the soil washes the sand washes away. It is not exactly a clay soil, but a sandy clay.

Mr. DeVilbiss: Is it blue clay?

Mr. Feebles: No, it is yellow clay.

Mr. Swaim: I do not wish to interrupt this discussion, but I want to call attention to the fact that I anticipate that the next topic on the program is a great deal like this one, and I fear we are taking the wind out of someone's sails.

Mr. Widney: I believe I am the next one on the program, so just give Mr. Feebles all the time he wants.

Prof. Latta: I am glad you have mentioned this point. We want to observe the point.

Mr. Feebles: I have the system of hedgerow altogether. They are thirty-two inches apart, but we plant them and work both ways until the first to the tenth of July, and then we let the runners alone. There will be two or three runners between the old ones, and after that we keep everything off. This makes a straight row and lets the sun in from both sides. The reason I do it is that I raise as many berries as I would if I should make my row one foot wide and put in a few more plants, but I always pick my berries the second year, and then burn off.

Mr. Swaim: How do you get the row for the second year?

Mr. Feebles: I let the old plants grow. I have one bed there, I think two, which I will pick, and they are a solid row from one end to the other.

Mr. Swaim: What distance apart do you put your rows?

Mr. Feebles: I put my rows thirty-two inches apart. I plow in cross furrows both ways.

Prof. Latta: Mr. Grossman spoke of the influence of the method of planting on the berries.

Mr. Grossman: I mentioned this in regard to the hill system.

Prof. Latta: Did you have the same experience?

Mr. Feebles: I have not had any trouble in this line. I have often had them to freeze out, but I guess this was because I didn't get them mulched quick enough.

Mr. Henry: Do you know what an acre will produce with that method of planting?

Mr. Feebles: I could hardly tell that, for I have used this method in a small way, I suppose about three hundred bushels. I have not experimented, so I can not give it exactly to the acre.

Mr. Henry: Do you get better prices for the berries raised in this way than for those raised in the row?

Mr. Feebles: No, sir; I do not get a better price. I think it is less work, however. Mr. Grossman thought it was not, but I can get more the second year. I would cultivate the plants right close to picking time.

Mr. DeVilbiss: Would you do that? That is an important point. I should like to know about when we should quit working the strawberries. I have heard that we should not work them after the middle or last of July, for you would drag the growth off of the runners. Have you had any experience along that line?

Mr. Feebles: I do this work just after every rain.

Prof. Latta: About how late—what months do you stop?

Mr. Feebles: About the latter part of August or the first of September. Perhaps I will work them once or twice more yet this season.

Mr. Henry: How many acres can a man take care of during a season by that method?

Mr. Feebles: I don't know. Not very many.

Prof. Latta: About how many would you judge?

Mr. Feebles: I should judge about two acres.

Mr. Henry: Do you find it profitable to raise just one crop—that is do you advocate taking just one crop?

Mr. Grossman: I find that is good. You get the very best berries on the first crop. I have found that to be true. Even in the row they look fine, but they are not quite as nice as they were the first year.

Mr. Hawkins: I think without exception that is the experience of all of us. I would rather plant out a two-acre bed at one time and attend it rather than to fix the old bed over, for I know that the new one

will be all right. I think it is easier and cheaper to take care of a new bed than to try to take care of an old one. Sometimes I do not do this way, because I only plant one-half of my patch new at a time, but while one is growing I am getting the other ready, I am putting on fertilizer, etc.

Hr. Henry: I should like to ask Mr. Hawkins if the market might not have something to do with the method used?

Mr. Hawkins: In a market like this it is not worth while to discriminate in favor of the large berries, at least not enough to justify the increased expense. I think it is cheaper to plow up a patch, however.

Prof. Latta: Do you agree to that, Mr. Grossman?

Mr. Grossman: As a rule, yes. Under ordinary circumstances. Three years ago I had a bed of strawberries and unfortunately they did not do very well for some reason or other, and I carried them over, and the second year they did fine, and then I carried them over the third year and I got double the crop the last year that I did the first and I got better berries. I only had one-half acre.

Mr. Hawkins: I think that is exceptional, is it not?

Mr. Grossman: Yes, sir. But I think it was largely on account of rain. The planting, half of it, that I picked this year I carried over. And you will remember that we had a very dry time here at berry picking time. The first berries ripened about the middle of June, and there hadn't been a drop of rain for about three weeks previous to this time, but we had a good rain about the fourth of July. It was very cold during the blooming season. My berries were not touched by the frost, but the berries were very far behind on account of the cold weather. I think we only got a half crop this year. But I will tell you about the crop last year. I cultivated until late, until November. If it is convenient and I have time, I bed them then.

Prof. Latta: Would you advise this on a large commercial scale or not?

Mr. Grossman: Yes, I would cultivate them.

Prof. Latta: Our experience is different from that.

Prof. Hedrick: Our commercial growers are more and more planting the cultivated crops, and are cultivating them until about the first of September. I would be afraid of the treatment he has just given for the late growth makes the plant tender, and I would be afraid of winter kill.

Prof. Troop: Do you keep your berries covered when there is snow on the ground?

A Delegate: In the southern part of the State there isn't much snow. Even if there were I would still use the straw in order to have the mulch in the spring when I pick my berries.

Mr. Swaim: I should like to ask one question. What do you growers do with the runners that start out after you quit cultivating?

A Delegate: They let them go. I think the second crop is always easier raised than the first crop, but the berries are not so large, and are not quite as good.

Prof. Latta: I would like to know if many of you here have any trouble with your plants being killed out by the winter?

A Delegate: We hardly know whether it is the winter or the late culture sometimes.

Mr. Grossman: I had a few killed out a year ago but not from late cultivation. I will tell you why it was. I mulched with straw manure, and wherever I mulched I lost the berries. It was not on account of the late cultivation.

Mr. Swaim: I used straw manure as mulch and never saw any bad results from it except this year, when I got quite a good crop of timothy from it, but you can always expect such as this.

Prof. Latta: I do not think it is a question of late cultivation.

Mr. Lodewick: I think that last winter was a very severe winter. It was with us, I know. As to late cultivation, cultivate just as long as possible right up in the fall, and as soon as we finish cultivating we cover them with straw.

Prof. Latta: Before it freezes?

Mr. Lodewick: Yes, sir; before it freezes. You can cover them without much injury to the ground.

Prof. Latta: Do you have compact clay?

Mr. Lodewick: Some of it is. We have a little high ground. I certainly approve of late cultivation. Last season was an exception.

Mr. Henry: I am surprised at the statements as to winter kill. We grow strawberries all over the northern part, and there is scarcely a winter when we are not troubled with this in some plants. If you lose

some it usually means the loss of considerable in a large patch, so we take extra care. The reason that we cover our plants is that it protects them from winter kill. We had considerable loss in our patch on this account until I took very stringent means to prevent it.

Prof. Latta: How many are covering their crops in this part of the State? We would like to have a word on this.

Mr. DeVilbiss: The reason I covered my patch was because I was looking over my fence and my neighbor covered his, and had excellent results, so I covered mine. From the thousand plants that he planted he sold $22 worth of berries, and kept plenty for a large family besides. I tried to buy straw that had no timothy in it, but it couldn't be found. I hardly know what to think of this cultivation. No man would go into his orchard to cultivate it in this way. I believe this is the reason they are having trouble.

Prof. Latta: Orchards and strawberries are different things.

Mr. Swaim: Strawberries need a great deal of rain, and they get it all winter, for after this time of year we are very apt to have an abundance of moisture in the soil, for there is plenty of rain. And whether we cultivate or not they will go on and make runners and they will keep on until freezing weather, so I don't believe under conditions here that it is wrong to cultivate late. We keep the weeds out then we want a covering for the crop of some kind. I am very much interested in this question.

Mr. Kimball: My experience with winter killing is this. The plants will heave, and in some cases, even when you have mulched heavily, and then cultivated both ways, it leaves the plants on the hill, and the straw mulch will settle away and they will freeze out, even when covered. Four years ago I had a patch, and I was experimenting with thirty different varieties in order to determine which was best for myself. On the hills and hillsides I kept the runners off until the middle of September, quite a few runners came after that, and I simply let them go, and the next spring I didn't get good results. I had no strawberries that year for the plants were all heaved out. So it seems to me that winter killing is governed a great deal by the method of planting and the methods of caring for the plants. I hardly think you will have any trouble with winter killing on account of late cultivation. I have cultivated after we have had freezes in the fall. I think the main thing we gain is the killing of the weeds that will start out in the spring in great numbers. This is more than balances up the danger from loss by cultivating.

A Delegate: Conditions are entirely different with us, for we have a very black soil—a rather heavy sandy loam, and we do not have any trouble with plants heaving. We always mulch just as soon as we can get into the patch after the ground freezes.

Prof. Latta: What about the length of time of cultivation?

Mr. Kimball: We usually cultivate up until October, and sometimes into November. We cultivate once a week or thereabout in order to keep the surface loose and the weeds out. So we cultivate up until the first of November or along about that time. I never have had any trouble at all with plants winter killing. I have tried shredded fodder and straw, but that is scarce.

Mr. Swaim: How do you like shredded fodder for covering?

Mr. Kimball: First rate.

Mr. Hawkins: Does it blow off?

Mr. Kimball: Not any more than the straw.

Mr. Swaim: Is it any improvement over straw as a moisture preserver?

Mr. Hawkins: No, I don't believe it is.

Mrs. Meredith: Does it have as many weeds and grass seed?

Mr. Hawkins: I hardly know about that.

Prof. Troop: In our country we do not have that kind of fodder. It is nothing but fodder. I would like to ask if you cultivate your plants in the spring before picking time?

Mr. DeVilbiss: I have always wanted to cultivate but my wife wouldn't let me do it. We did it once and she thought it spoiled the berries.

Mr. Widney: This winter our strawberries winter killed from a different cause than a severe winter, and those of you who have been in our section know that we have a natural drainage of soil, in fact we have a perfect drainage. We have a gravel bed with a loose clay subsoil eight or ten inches thick, and the rest is sandy loam. We lost a great many plants by winter killing as we call it, but we find that it was on account of the land. There was frost in the ground and the water could not sink through, and could not get away, so it laid on the bed all winter. Ordinarily in our soil we are not bothered with winter killing.

Prof. Troop: Some growers cultivate in the spring before it is time to pick the berries. Some of the growers out our way practice that, but not all of them. They take the straw off and cultivate, and put it back again. It gives the plants a better send-off in the spring to cultivate before picking. Does anyone use a weeder in their strawberries?

Mr. DeVilbiss: Yes, I do, and it is doing fine.

Mr. Feebles: Two years ago I did. I tried cultivating in the late fall and then using rye straw and the rye came up thick, and I went in and pulled the straw off and kept on cultivating until I got all over the patch.

Mr. Swaim: What is your objection to spring cultivation?

Mr. Feebles: I like it because it conserves the moisture, and kills the early weeds which would get a good start before the picking season would be over.

Mr. Swaim: Perhaps you are not in the habit of mulching very heavy. Perhaps not enough to keep the weed growth down. I do not see any objection to spring cultivation, except that it makes more work and more expense.

Prof. Latta: Would the compactness of the soil have anything to do with the question of spring cultivation just before fruiting?

Mr. Swaim: It might have.

Prof. Latta: Do you think it would have, Prof. Hedrick?

Prof. Hedrick: I think it might have.

Mrs. Meredith: We can count this in different ways. It takes about three hundred to the acre to get one hundred and fifty bushels. It takes you two years to raise what would be one crop of two hundred and fifty bushels or five hundred and fifty bushels for three years. I am always thinking of the acre, and I am going away now, but I do not want you to forget to think about the acre. Are you satisfied when it takes the acre two years to do what it should do in one?

Prof. Troop: Isn't it better to raise three hundred bushels than only one hundred?

Mr. Swaim: I would say that we raise a potato crop after we get the strawberries off.

Mr. DeVilbiss: I would like to hear Mr. Henry's experience in regard to late cultivation.

Mr. Henry: We grow ten acres every year. We cultivate just as long as we can. I had a good example of this last year. I have a neighbor across the fence. Our soils are exactly the same, and he is a man that likes to copy. He can not get away from home long enough to attend one of these Institutes. He told me this spring that I was the luckiest man he ever saw, for I had a crop of berries last year and was going to have one this year. There was no luck about it; it was all good management. In the first place he planted the weakest plants he could find. That is a wrong thing; I would not do it. After he set them out he let them get so weedy that when he went to clean them out he couldn't tell where the strawberry plants were. He never puts any manure on the patch. Now it was not on account of good luck that I have berries, but on account of management. This same man spoke of his varieties. He had Warfields, and he seemed to think they were no good at all, and I showed him Warfields which I had, and he wouldn't believe they were Warfields. My rule is to do the thing (not just think about it) which I think is the very best thing to do. Last fall about the middle of October I went over the rows with a garden rake and raked with all my might, and pulled all the runners out and stirred them up, and in a couple of weeks I mulched them. You ought to have seen the difference between the ones that I treated like this and the ones that I didn't. I believe this is a good plan.

I want to say something about Michigan. I am in competition with Michigan berries. My market is the Chicago market, and I can conscientiously say that I know I get double for my berries what they get in Michigan. I will tell you the trouble with Michigan. They have about two-thirds of their berries frozen out. Whenever the Michigan berries come into the market the market goes down. The trouble is, Michigan raises too many berries, and their berries are poor. If they would raise berries like Indiana there would be no kick coming. They raise too many, and therefore raise poor ones. Instead of raising ten or fifteen acres and not attending to them well, they should raise two, three acres, or a half acre, like the people in Indiana do. We put a better class of berries on the market. They generally sell theirs from sixty to ninety cents.

Mr. Grossman: I have been asked as to mulching. As I have said before, I mulch when the ground is frozen hard enough so that the wagon does not cut into the ground.

Mr. Van Deman: I would like to say that I was out to Mr. Pierce's place, and I noticed something that was new to me. He said he had been having trouble with his berries freezing out, just as we have been

talking about, so a new idea struck him, and he is raising corn with which to mulch his berries. That was a new idea to me. It would certainly be clean. He grows the mulch right there on the land. I think this idea is worthy of our attention. It would be nice to provide ourselves with this mulch right at home. It seems to me that corn would be fine to keep the berries clean. I believe in mulching, and I do not know of any better material for this than the straw, except for the fact that in the straw there are so many kinds of seed. But it is also a dangerous thing to put on manure, for it, too, has seeds in it.

Another thing in regard to spring cultivation. I have tried it, but I would not advise its use. It is too expensive, but I do believe in late cultivation.

Mr. Henry: Wouldn't you be afraid the corn would shade the berries too much?

Mr. Van Deman: I would sow the corn. I would make it just as thick as I could get it to come up. I would cut it with a binder and shock it until I needed it.

Mr. Henry: Wouldn't the corn be worth more for feed than as a mulch?

Mr. Van Dieman: I think not.

Prof. Latta: I have had reasons for letting this discussion go on because you seemed to be interested, and in such case the Chairman does not feel quite competent to conduct this kind of a discussion, and he will feel thankful if the leaders in this line will give him their suggestions.

We will hear from Mr. Widney, of St. Joe Station.

Mr. H. M. Widney: I am like Mr. Grossman, and this has been a very embarrassing time for me from the fact that I have not been active in strawberry raising, until the past year, for three years. I have been in other lines of business, but from what our Chairman has said I consider that he wants us to give our own practical experience on practical fruit growing with practical reasons.

There is one thing which we have not touched upon in our talks this morning, and I feel that it is one of the essentials. You must have a first-class plant or your strawberry culture will be a failure, sure. I think this point has not been touched upon. I have in mind my own experience. I was swindled by a vagabond strawberry plant salesman, and it makes me angry every time I think of it. It seems to me that

there are several men that practice these illegitimate practices in our profession, so the first thing that we must do is to be careful what kind of plants we get, and be sure to buy of some responsible, first-class, legitimate grower.

Now, as to varieties. I have tried several new varieties, but I have found that it is pretty expensive to experiment.

The first variety that I wish to mention in this line is our old friend, Sister Warfield, if you will excuse the expression. She is certainly the Queen of the field. No difference whether you have a heavy or a light soil, if you have a good plant she will do all right. And it is an excellent berry for canning purposes. Every customer that cans berries likes it. There will always be berries the second year. I think it is without doubt one of the best canning berries we have in the market. The Warfield has been a standard for some time, and why should we forsake her now and take up some new variety that we know nothing about. I believe I would have had dollars where I now have only pennies if I had practiced this preaching.

We find that the Excelsior is a good berry. We have the Excelsior between two rows of Warfields this year. Our idea is to have it pollenized well.

On high soils or on light soils the Haverland is good, and I believe it is good on heavy soils, and we can speak nothing but praise excepting for its softness.

The Bismarck is another one, but on our light soil it is a failure. We have no more use for it. We have grown the Tennessee Prolific. At first we thought it was all right, but we have discarded it. Our reasons are that we ship berries and they will not ship well.

The Clyde with us produced a good amount of berries, but no foliage to speak of on our soil. On heavier soils I understand it is all right. The Brandywine is another. Our first crop was immense. We thought we had struck the keynote when we got our first crop of these. But it failed ever afterwards. It didn't seem to come up to the standard.

The Bubach is good. It is a splendid berry for our home market. It is attractive. It has a rich, waxy, glossy appearance, and when it is ripe is is very good with us.

We tried the Parker Earl, but in our soils it did not prove what we had expected. I understand that it is better on heavy soil. The Glen Mary is no good on light soil. We have no use for it.

We were very much pleased with the Ridgeway. I will tell you that we were off of the farm for three years, and the man on the farm neglected the strawberries. We carried over the bed that had been there for three years, because it was a case of necessity. We found some

Ridgeways, and they were beauties, and I am inclined to think that they are all right. I think they are good in every respect. It does not grow so very large, but it is very beautiful. It is a nice, fine grade of berry.

Now, concerning the Senator Dunlap. I look forward to this berry as an ideal. It has a fine plant growth, and the berries are immense. If we have anything that is better than the Warfield, I do not know but what this is it.

We have the Cary, but it is not very good on light soils. We also have the Uncle Jim. It is a very sturdy grower. We have some of the fruit this year. On the Marie the plant growth is good, but what the fruit is I can not say.

I have covered what comes to my mind of these different varieties, but if there are any questions I shall gladly try to answer them. This matter of varieties is a very deep matter to all of us, but in conclusion I will say that I believe experience is the best teacher that we have, for what is good for our neighbor will not do well for us, and especially if there is a little variation in our soils.

Mr. Talbert: If you ever operated a sailboat you will know that you should stay very close to the shore, so you can not expect me to go out very far this morning. I am a very limited strawberry grower, yet I have grown some every year for a great many years; for more than twenty years, some twenty-five years, I guess. I started with the Wilson. That is a magnificent berry, but I haven't grown that for a great many years, having found others that pleased me better, but this was my first introduction into the strawberry business. The next berry that attracted my attention was the old Meyers Prolific. I am sorry I lost that berry. I was wonderfully enthusiastic with it. The berries were of a fine quality. The Longfellow was another berry that I have grown. I think a great deal of it. It is very fine. In the time that I have been trying different varieties of berries, I do not think I have tried out of the very large number that is being grown at the present time, more than thirty or thirty-five different varieties, so I can not go through the whole catalogue. After leaving the Meyers Prolific and the Longfellow, I tried the Old Sharpless, which was a magnificent berry in quality. Following this I tried the Haverland, and I have stuck to that berry and staid by it ever since. The Haverland is one of the most productive and best berries to my mind, and I believe it stands at the head of the list, and I do not believe I have ever seen it on any soil on which it was not a success. It is a success everywhere and under all circumstances. It will not disappoint you. I have had it ripen just two or three days after the Excelsior and have gathered it when I have gathered my last berries, and have gotten good berries all the time.

Then there is the Warfield that has been spoken of. The Warfield bothers me just a little, because it is one of those everlasting growers and keeps on growing and taking hold, like Russia. It wants to take hold of everything in its reach, and that makes hard work, but it is a magnificent berry, and one that will not disappoint you. In Albion market it is a good one, and I have not been able to supply the demand for canning purposes. I can sell them at the highest price, and they grow on all soils.

The Brandywine is another berry that I have had good success with, and still have it. They bring about the same price that the Warfield does in the canning season. They are red all the way through, a fine canning berry, and has an aroma that is peculiar to itself. It is fine.

There is another berry that I like very much, the Sample. It is one of the best berries in the country. I am speaking, too, of berries for market as well as for the home. It is a late berry and you get berries late.

The Clyde is fully equal to the Haverland in production. This is a berry that will ripen very nearly as soon as the Haverland, and will continue late, and will grow big berries all the time. They never are nubbins. They start out big and continue to be big. It is hard to find a berry that is better than the Clyde.

Lovett's Early is very nice and ripens about the same time as the Haverland, and I would recommend it to go with the Haverland. It is now called the Lovett.

The Gandy is a late berry which I admire greatly. I have tried the Marshall. I do not know whether I have ever been duped by the nurserymen or not, but if I have ever had a Marshall I never want another one. The Gandy is one of the greatest late berries I know of, and for me it has succeeded admirably on all kinds of soils that I have tried. I have a sandy clay soil, but I tried it on a black soil and it succeeded fine. While it is not as productive as some berries, yet it produces a good crop.

Now there are a great many others that I have tried, and I think a great deal of some of them, but I am giving the varieties that are best adapted for market purposes as well as for the home. There are quite a number that I have not given, but I have mentioned the most productive berries.

Now, so far as soil is concerned, I will say in regard to that. The Brandywine with me hasn't done as well on clay soil as some other berries. It produces too many nubbins. On other soils I have had good, large, fine berries, and quite a number of them. The other berries that I have mentioned, have, so far as my experience has gone, succeeded

almost universally on the different soils, and I have seen but little difference in their production.

Mr. Kimball: During the last seven years our organization has had this subject up a great number of times, and I have always noticed that when we get through there have been so many varieties discussed. The grower who wishes to plant a small patch for his own use is more at sea than before the discussion began, I believe. I think we should discuss these in an intelligent manner, and bring out the best varieties for the different soils. I think if each speaker would state in this discussion the kind of soil he has, and three or four of the best varieties that succeed for them best, we could get real good from this discussion. The inexperienced grower wants to know what to plant. There are so many varieties that we are at sea to know what to plant and what not to plant. I will simply state that on heavy clay soil the Gandy has been quite a success, and on high soil the Haverland has been a success. I find that the Haverland is a success on all kinds of soils. I also like the Warfield. So then, we have three varieties that we can depend on. If you have black soil I would not advise you to plant the Gandy. I am on the lookout for other good berries.

Prof. Latta: A request has come to the chair, asking that we ask for the best five varieties from the different growers. Suppose we have in mind the varieties that are good for market varieties on clay soils, or would it be better to limit it to three varieties?

Mr. Grossman: I think that would be most too narrow.

Prof. Latta: I would like for the strawberry people to be thinking of their soils and the five varieties that are best suited, in their judgment. We can get a concensus of opinion in a very short time in that way. We can accomplish more in the time at our disposal than otherwise. Please be getting your names ready.

Mr. Grossman: My soil is largely loam—sandy, black loam—and I would name first the Warfield, the Bederwood and the Ridgeway, for a home berry, and also for fancy market, and the Senator Dunlap. This is a good berry and will go with the Warfield.

Mr. Widney: Our soil is a loam, with a gravel subsoil, and a clay strata through it. I would put the Warfield at the head of the list; the Haverland second, with the Bederwood and Dunlap, and for a late berry the Gandy.

It seems to me that we should state here what berry we want to pollenize another berry with.

Mr. Van Deman: It will be new to a great many people that there are varieties so imperfect that they will not produce berries alone. That is something, of course, that skilled horticulturists take for granted and never think of mentioning. I have known people to grow berries with a great deal of care, and raised nothing at all, excepting a very few imperfect berries. There is a great difference in berries, and you must be sure to get a pollenizer that flowers at the same time. I thought this subject needed to be mentioned. For instance, the Dunlap is excellent for the Warfield, and will do for the Haverland.

Mr. Swaim: My soil is sandy loam. It is heavy, sandy loam, and mixed with clay. Before proceeding with other varieties I have a word to add. My observation is that wild berries are the same as tame ones, and will not produce without a pollenizer. I have found that kind.

Mr. Van Deman: I do not think it is true of the native American type.

Mr. Swaim: I would place the Warfield with the Dunlap for pollenizer, the Haverland with the Clyde, and the Gandy for late.

Rev. Talbert: I have two perfect flowering berries and three imperfect—the Haverland, Warfield, Clyde, Sample and Gandy.

Mr. Henry: What kind of soil have you?

Rev. Talbert: I think it would fall in the clay soil list. Will you give us a list?

Mr. DeVilbiss: Is your soil clay?

Mr. Henry: Yes, sir. This is the hardest thing in the world to do. I would suggest the Warfield, Haverland, Dunlap, Klondyke and Bubach.

Mr. DeVilbiss: In order, I would plant the Bubach, Haverland, Michael's Early all the time for a pollenizer. The Gandy will not ripen good and will not fertilize up good. Our subsoil is very heavy clay, and the top soil is extremely heavy.

Mr. Feebles: I have had experience with many, but I have the Haverland with Lovett, the Bubach with Lovett, the Brandywine, but it did not do very well, so I will not include that.

Mr. Lodewick: This is a very difficult matter to decide. If we are to name only five I would name the Warfield first, Haverland for a late berry, and then the Gandy and Sample. I hold part of my patch back to ripen with the Gandy.

Prof. Troop: I want to add my list. Warfield, Haverland, Clyde, Dunlap and Bubach, and I want to add the Gandy for late. I would not give the Michael's Early room. I want a berry that will do something besides fertilize.

Mr. Swaim: The question of varieties is an important one. We want to know just what to do, whether to stay by the old or take up with the new. There are a number of promising new varieties, that were left out here today entirely, but they are very promising.

Prof. Latta: We will now hear from Prof. Troop.

Prof. Troop: There is not much to be said on my subject, "Prevention of Diseases and Insect Depradations." There are a few specimens of insects that attack the strawberry that have not been mentioned here, and among them is the leaf roller. The leaf roller is a little moth that attacks a plant in the spring of the year, laying its eggs on the leaf and rolling them up, and feeding on the green portion of the leaf. Now this little insect often does considerable injury to plants, especially where plants have been grown for several years in succession. When a bed is left in the same place for two or three years, this insect may be very bad the last year or so, and if strawberries are grown right in the same vicinity year after year it will give serious trouble until something is done. This little moth lays its eggs on the leaves and begins its work just about the time the fruit is ripening, so it would not be possible to poison it on account of poisoning the fruit, and anything that would poison the insect would poison a person. So then, it is not practical to use poison upon it, because the fruit would be poisoned at the same time. This little insect must be handled in some different way. The only way that I have found to treat it is to burn over the strawberry patch after the fruit is picked. There has been quite a good deal said about this, but my experience is that this is one of the best things that can be done with a strawberry bed if you are going to leave it for another crop, is to burn it off. In this way you destroy all the leaf rollers, and any other insects that may be there, and at the same time destroy all the weeds, and your plants will come on clean and healthy and good. Now this one thing tells the whole story in regard to most of the insects. Not all. This is fine for the leaf roller and all the diseases that attack the leaf of a plant. Many varieties are subject to the rust.

Mr. Van Deman: Are you troubled with the white grub?

Prof. Troop: Yes, we are. But when you burn the patch off the plant comes up nice and fresh. I wonder how many of the growers

in this vicinity practice burning over their strawberry beds? A number do, but not all. You will find that this is one of the best things you can do if you leave the bed two or three years. Some are afraid of burning plants because it will kill them, but it will only help them, and you will be surprised when they come up again, and see how fresh, vigorous and bright the foliage is. Burning will destroy all the insects above the ground that attack the strawberry.

There is a little beetle attacks the roots of the strawberry, and another attacks the crown of the plant. The eggs are laid in these places.

The white grub is one of the hardest things to manage. This is under ground, and about the only way to kill it is to set moles to work and they will do the work, but they are about as bad as the grub. The only practical way is the frequent rotation of the crops. Do not allow the plants to stand in one place very long. Plow them up. Move the bed to some other place. In this way you will often get rid of this insect. Do not give them a chance to increase—do not let them get started in one locality. In plowing, plow up the plants in the spring and give the birds a chance to get the worms. The birds will clean up the white grub better and quicker than anything else. If you want to plow in the fall, plow before the birds have gone in the fall, and they will take up large quantities of them.

Another thing is clean culture. You should clean up after a season is over. Many insects hybernate in the dead, dry leaves and pass the winter in them and come out in the spring and lay their eggs. By cleaning up this rubbish in the fall this is prevented.

I think this is all I want to say, except to answer questions, if there are any.

Mr. Henry: I would like to ask Prof. Troop about strawberry rust over the state.

Prof. Troop: In some localities it is very bad. In some varieties it is much worse than in others. This is a thing that should be studied in selecting varieties. You should get varieties that are as near rust proof as possible. The Bederwood is early flowering, but it is subject to rust.

Mr. Grossman: I know that, but I have understood that it has been held in check by the use of the spray pump.

Mr. Lodewick: Do you have any preference as to the kind of mulch you use?

Prof. Troop: We use clean wheat straw if we can get it.

Mr. Lodewick: Isn't oats just as good?

Prof. Troop: We do not use oats unless we have to, for it is too dirty.

Mr. Lodewick: In case of burning the bed, does that make any difference?

Prof. Troop: Well, when we do not cultivate before picking time the weeds get too much of a start.

Mr. Lodewick: I always go through the beds with a hoe several times.

Prof. Troop: Well if you do that it will do.

Mr. Widney: Isn't it a fact that you find shredded corn fodder about as clean a mulch as you can get?

Prof. Troop: Yes, sir.

Prof. Latta: Have you any questions about insects?

Mrs. DeVilbiss: Can you get rid of these insects by simply plowing before you plant?

Prof. Troop: I would not set plants in the ground where there were insects.

Mr. Henry: I have seen green worms on some of the old beds. Is that the same as the currant worm?

Prof. Troop: I think that is a species of the saw fly. It is another species of the currant worm which works on strawberries.

Mr. Henry: Do you recommend the spray pump for one crop a season?

Prof. Troop: I do not do it. There is no use in it. It is only where you leave a bed for several years that they are attacked by these insects and fungous diseases. It may be that the white grub is in the ground and is ready to mature when the plant is there. In that case there will be trouble the first year. It takes four years for the grub to mature, and it must be in the ground for the first two or three years. The year before it comes to maturity is when it causes trouble.

Mr. Van Deman: I think that Prof. Troop has stated the case in as concise a manner as possible, and the whole subject of fungous diseases can be almost abandoned if we will just endeavor to raise just one good crop and quit, and plow under, and get another setting of

young plants. This has been my experience and observation in my travels that I have made from north to south and from east to west over the country.

Prof. Latta: Now Mr. Kimmel we will give you a chance. I would like to suggest one thing right here, and that is that in your talks you would limit yourselves to two minutes, so as to give a chance foi quite a variety of questions and expressions of views.

Mr. Grossman: Will you please explain. Does this discussion confine us to strawberries or small fruits?

Prof. Latta: To all horticultural topics except apples.

Mr. Kimmel: Mr. Chairman—In the short time we have I shall not hold myself in readiness to answer any questions that might be asked, for there are many in the audience here who are able to answer any question that may be asked, as they have made quite a study of this. I have not had much experience along this line. I should like to hear from three or four of you about pedigreed plants. I should like to hear from Mr. Van Deman what he thinks about them.

Mr. Van Deman: If you ask me I shall have to say that I think if you try pedigreed plants one year you will let them alone the next. I think there has been a good deal of hob nob on that point, and I will not spend any time discussing it. I will let theorists do that.

Prof. Latta: Have you any other questions on this subject that you wish to ask at this time? I believe Mrs. Davis has something to say to us, and we will give her two minutes right now.

Mrs. Davis: I would like to answer a question that has been asked me a dozen or more times. I have been asked why I raise plums instead of letting Mr. Davis raise them. I want to say to you that I was fortunate enough to get one of the smartest men in Laporte County, but he would not raise plums, and I wanted plums, so I went into the business myself, and I have made a success of it so far.

Mrs. DeVilbiss spoke of Mr. Morrell's orchard and said that his peaches did so much better on the hill than in the valley. Our experience is entirely different. Mr. Davis took the advice of some Michigan friends and planted on the highest spot, and the wind comes along and sweeps through the orchard, and three times our fruit has been killed. In the valley the wind is tempered before it reaches the fruit and it does not winter kill. Without regard to variety they will kill by freezing. I have some of the finest peaches I have ever seen anwwhere. I sent

thirty to the World's Fair by American Express, but it took them four days on the way, and when they got there they were spoiled. I find that peaches are very successful in Laporte County, but we did not have success on the hills, and I would not advise anyone to plant there.

Mr. Kimmel: I would like to ask Mr. Feebles if he considers it of importance to the grower to propagate his berries?

Mr. Feebles: I think that this is very important. I think that the grower should grow his own plants himself, and know just what he is growing, and grow only the best.

Mr. Swaim: If this were to happen what would become of the professional plant growers when each man raised his own plants?

Mr. Widney: I think that some of them ought to go out of business. Mr. Lodewick and myself have had some experience in getting plants from professional plant growers—I will not mention their names, but the experiment was very unpleasant. We have both of us tried a firm in Michigan which we have found honest and trustworthy and always sends us good goods, and we would not change from them.

Mr. Swaim: I had experience in purchasing from three or four different firms in Michigan and I believe the plants were all right when they left. They were shipped by express.

Mr. Widney: When you receive a bunch of plants packed in trash you can just decide they are not very good.

Mr. Swaim: In reply to Mr. Widney's remark I will say that I would not accept plants received in that condition, and I do not believe any man is worthy of the name of professional who sends out berries in that condition.

Mr. Widney: We had paid for them, so what could we do?

A Delegate: Now, in regard to pedigreed plants, I want to say here that you need the experience in selecting strawberry plants the same as you do in selecting seed corn.

Prof. Troop: Will you please explain what you mean by selecting plants. Do you mean selecting the breeds year after year, or selecting the strongest plants?

A Delegate: I mean selecting the breed year after year.

Mr. Kimmel: What is your idea, Mr. Troop.

Prof. Troop: I think there is something in it. I will say that I have tried Kellog's plants several years, and I set them out by the side of home grown plants, and I attended to them in the ordinary way, and the result was, if there was any difference at all, it was in favor of the home grown plant.

Rev. Talbert: Is it not a fact that plants are far more satisfactory to the grower if they are taken up and set out the same day right in your ground? Are the chances not greater in favor of their living and producing good, strong, healthy growths much better than when they are removed a long distance?

Mr. Kimmel: That has been my experience.

Mr. Van Deman: I think, Mr. Chairman, it is all right to select from the very best stock you have. I think that is certainly the correct thing to do. I do not believe in any high spun theory on pedigree. I think it is a nuisance. I believe in selecting from the best stock you can get. But I have seen plants raised right by the side of the home grown plants, and if there was any difference it was in favor of the home grown plant. I think it is a good idea to move plants just as short a distance, and plant them within as few hours from the time of taking up, as you can. I think this is right, and that is one reason you can have better success with the plants that are home grown than otherwise. I believe in this doctrine. I would practice it wherever possible.

Mr. Henry: I would like to ask Prof. Troop if he will make a statement as to what he is doing now.

Prof. Troop: I will not give results, but I will say that last spring we started an experiment along this line. We sent to Kellog to get four different varieties of his pedigreed stock, and we got some other varieties from a dozen different localities—from four or five different states—and we planted them all out together on the same ground and gave them the same treatment, and in a year or two we will say something in regard to the result of this experiment. At the present time I do not see much difference.

The only advantage that I can see in raising our own plants is that we can set them out the same day. The trouble is that we are not always ready for the plants when they arrive, and we have to heel them in for some time.

Rev. Talbert: I will say that when I raise a propagating bed for planting I will dig the entire row up and throw every plant that is not worthy of being set out, and only set out the very best.

Mr. Williams: When you have a plant bed it throws out runners. Where will you get new plants for starting? I will not use an old plant to set out a new bed. Do you have any rule by which you cultivate?

Rev. Talbert: To illustrate. I want to set out a lot of plants next spring. This spring I will set out plants and next spring I will take up the row and throw away all the weak plants. I will leave the plants that are well rooted. I have had poor plants sent to me, but I will not put them out unless I have nothing else. I only put out good plants. The plants that I set out I take from those that have never produced berries, and I follow this plan up year after year.

Prof. Troop: Do you take the first new plants that are made?

Rev. Talbert: Yes, sir, I take the strongest plants.

Mr. Van Deman: I think Mr. Henry told us something of value some time ago, and that is to take a forked hoe and go into the patch and pull up the runners by the roots and only leave the strong plants. I know the common practice is to cut off the runners. Others will come out if you do this, but if you follow Mr. Henry's suggestion they will die and never amount to anything, and the mother plant will be a great deal better for your having destroyed these young ones. This is the case when raising strawberry beds for plants as well as for fruit. This month and next month go along and tear up the runners.

Mr. DeVilbiss: Take a weeder and go over the patch and you can take three rows at a time.

Mr. Henry: A weeder isn't strong enough; it takes more muscle.

Mr. Van Deman: If you will use the weeder long enough and quick enough I think you can succeed. If you wait a day too long you will not succeed.

Prof. Latta: The meeting stands adjourned until 1:30.

WEDNESDAY AFTERNOON SESSION.

Prof. Latta: The meeting will now please come to order. I think that we might take a few minutes right here in regard to the question that Mr. Stanley asked last night. He wanted to ask it again this morning, but it seemed that we did not have time for it. I think we can discuss it here now while Mr. Van Deman is getting ready to give us his discussion. His question is in regard to cultivating during a dry time. As I have said, it should have come up this morning, but we

passed it then, so we will take it up now. Mr. Stanley, will you please repeat the question as you would like to have it put?

Mr. Stanley: I put the question as to the advisability of plowing corn frequently during drought in extremely sandy soil, but I will change that to any soil, and if there is any difference I should like for it to come out in this discussion.

Prof. Latta: Well now I would like to ask first how many corn and strawberry growers do cultivate their corn or strawberries, and keep it up during the dry weather? Are there any that cease cultivation during the dry time? If so, will you please raise your hands. Now the reasons that we will have will be from practice. We will have your views first, Mr. Stanley.

Mr. Stanley: I will say that I cultivate during dry seasons, because my father did so and he was a successful corn raiser, I simply did it because he did. I do not believe I ever destroyed a crop by doing so. I have loam, clay and sandy soil.

Mr. DeVilbiss: I cultivate during a dry time with a fine-toothed cultivator, and if it becomes an extremely dry time so that there are cracks in the ground I take an old mower wheel and hitch a horse to it and drag it through the rows. This will close up the cracks and in the driest time will keep the corn green and keep it from firing.

Prof. Latta: Would you cultivate in this way once a week or oftener?

Mr. DeVilbiss: Oftener if I could. The more I stir the soil the better, for I get a mulch of fine soil about two inches deep.

Mr. Henry: Yes. This keeps evaporation from taking place so rapidly, and keeps the soil moist. I think subsoiling is one of the best things that can be done. This makes a reservoir for holding water.

Mr. Widney: If you have noticed after a rain often there will be a crust formed on the top of the ground. Whenever this happens it is the same as allowing the wick in your lamp to be pinned loosely, the capillary action of the soil is paralyzed, and that is the reason we ought to keep up this constant cultivation. Along this line allow me to mention one thing that some of you have heard. Last winter at our institute Mr. Johnson was with us. I believe his idea was correct, although our spring was so late this year that not many of us got to practice what he preached. His idea was to thoroughly pulverize the surface before turning over with a plow, and then to pulverize the upper surface.

Mr. Stanley: I would like to ask this question. During harvest we are so busy that we do not have time to go into the corn for possibly two weeks. I want to know if it would be injurious to go into the corn and cultivate it after it had laid these two weeks, or had we better leave it alone?

Mr. DeVilbiss: I believe I have been very successful as a corn grower. I go right into the corn and keep the ground stirred.

Mr. Stanley: The theory advanced is that we should just break the crust. I do not think it is a wise policy to break the crust after it is once formed, for it will break the roots. I allow the crust to remain until after a rain comes.

Prof. Latta: I have been in corn fields and examined them after a rainy spell, and if you will examine them after several days of rain you will find many little root heads coming close to the surface. This is only after a spell of dampness—several days of rain—and in such a case I think you will have to choose against a limited amount of root destruction and the renewal of the moisture. You may need this for the dry weather which will follow. I do not know that we can answer this question more definitely.

Now I wish to say a word on the question of pulverization. Take Prof. King's first book on the soil, and it is based on actual laboratory tests. We have made the same tests in our laboratory that were suggested by him. He discovered that in cans filled with soil the evaporation was greatly reduced by stirring the top of the soil, not allowing it to settle down again into close relation with the underlying soil. I think the best corn growers in the state are following the method of repeatedly stirring the ground during dry weather; shallow but frequent cultivation.

Mr. Stanley: I would like to hear from Mr. Harvey on this question.

Mr. Harvey: I do not have anything to add, except to say that I agree with what has been said on this subject.

Mr. Henry: It is very hard to convince some of our old farmers that it is a good thing to cultivate with a small toothed cultivator. They would be using the wide cultivator from daylight to dark and think it is the best. Is this not on account of the fact that in their younger days they planted corn deeper, and for that reason the roots were deeper, and they could use the large cultivator to better advantage? I wonder if there is anything in this?

Prof. Latta: Is it not that with the better soil the plants were better able to stand it?

Mr. Henry: Yes, possibly that is true.

Prof. Latta: This experiment with the cans demonstrated that if the soil is let alone the water evaporates from it much quicker than if you kept stirring the soil. This principle has been well established, that you want to keep the ground thoroughly pulverized. Keep it in that form by frequent cultivation.

We have three topics this afternoon, "The Care of the Bearing Orchard," "Marketing and Storing," and "Enemies of the Apple and their Treatment," besides some resolutions. We have two gentlemen to speak on the "Care of the Bearing Orchard." I think I shall take the liberty of saying that each of these men shall speak fifteen minutes instead of twenty. We have used some time with the question that was left over. Mr. Van Deman will speak first. He is from Washington.

Mr. Van Deman: Mr. Chairman, Ladies and Gentlemen.—I suppose in all the lists of horticultural subjects there is no one which deserves more thorough attention than the care of the bearing orchard. Now in practical life there is every sort of treatment for the apple orchard from letting them absolutely alone after the hour the trees are planted until they are finally vanished or vanquished by weeds. We have in this State, and in a great many states of the Union, a great many old orchards, and I think perhaps we ought to mention this first. There are a great many old bearing orchards that have been neglected until they are absolutely worthless, or nearly so, and in my opinion there are a great many of these that it would be better to cut down and make into firewood and get rid of them entirely that it is to let them stand and cumber the ground. But there are a great many others that if they were properly cared for would return a good, handsome profit to the owner. I want to say that while there may be a great many who believe in the practice of using these old orchards as calf pastures and horse pastures and hog pastures, and all that sort of thing, but they get from the orchard an inferior quality of fruit. While it may be proper in some cases to make this kind of a compromise, it is not the proper thing to do as a rule. The farm may be so arranged that there is a more logical solution of the question, but if we intend to get the real good of these trees, we must not undertake to make a pasture or a meadow out of the orchard.

I presume that you have all heard of the grass mulch method of orchard treatment. There are several orchards in this country that are in successful bearing under this sort of treatment. They are not among the oldest orchards, but still some are quite old. I refer particularly to

the orchard of Mr. Hitchens, in New York. I have been in this orchard many times. Some of the trees are about sixty years old, and are in thrifty, healthy, profitable bearing condition standing in the grass. This man holds strictly to the practice of taking nothing whatever from the ground excepting the apple product. The grass is mowed once a year, and he mows this orchard and leaves the hay on it to rot on the ground.

Now there is another case in Ohio, near Delaware. The orchard is owned by Mr. Burgoyne. These are two of the most notable cases of the successful grass mulch method. The soil is adapted to this kind of treatment. There are springs above them that come out and penetrate the soil, keeping it moist and the grass grows rank and green throughout the summer. This is not the case in the ordinary apple orchard. Other people are trying this method, and some are plowing up their orchards. If we would take this matter in hands right away, and would plow up our orchards between now and fall before cold weather sets in, it would not hurt. I would sow something (cow peas or clover) on this ground, and next spring turn it under. This makes it fertile. The nitrogen will be taken up by these growing plants and if left upon the soil helps it. By all means do not put hogs in an orchard. Sheep will not hurt old trees, especially if you will feed them grain or bran. They will keep adding fertility to the soil, and what they take from the land will be given back again. I think a fine thing to plant in an orchard is cow peas. They are very fine to turn under to fertilize the ground. You would be surprised to see what a condition the soil will be in afterwards. When you have cow peas in the orchard you can turn the hogs in and they will not bother the trees. The hogs will fatten on it, and you will have brought your orchard into a very much better state and so will profit thereby. You must not always be taking something away from the orchard and not returning anything. The average farmer wants to see how much he can take away from his trees instead of how much food he can supply to them. You must add something to the soil for the benefit of the fruit. I do not believe in the grass treatment for the average orchard, but there are conditions under which it is certainly successful. I think it all depends. You will be surprised at the vigor trees will put on after being treated like what I have suggested. In western New York, which is the greatest apple growing section of the United States, a great many of the old orchards that have been standing there for years and years in grass, have been plowed up and tilled, and they have borne abundant crops of fruit, where before they were bearing but scanty crops. In some cases the people have taken out an entire row of these big trees. They have taken out about three-fourths of the trees and are treating the remaining trees in this manner, and the results from the one-fourth re-

maining are much more than they could have possibly been from the whole number originally there.

Prof. Latta: That is heroic treatment, isn't it?

Mr. Van Deman: Yes, sir; and that is one thing I want to say about the general manner of orchard treatment. The apple orchards when they get old have changed from apple orchards into apple forests. There are a great many people who think they are in the fruit business when they are really in the forestry business. Apple forestry. I have seen trees, apple trees, and a great many of them in the State of New York that were twenty feet to the first limb. The trees were planted about twenty-five feet apart. These people are simply in the forestry business. And what do they have for fruit? They have a few scrawny apples.

As a whole, young orchards are planted too closely for permanence, but not too close for temporary purposes. If I had my choice I would plant my permanent trees not nearer than forty feet apart, and I think fifty is better, and I would fill in between the permanent trees with peaches and plums and pears, and possibly with apple trees that would come into bearing early. I feel complimented because I was the originator of this idea in Kansas. This I think is the better idea—to put in the temporary trees that will come into bearing early and serve their purpose before they come in conflict with the other permanent trees. I would plant these trees with the purpose of cutting them out whenever the time came that they interfere with the permanent trees.

Prof. Troop: Will the average man do this?

Mr. Van Deman: No, the average man will not.

Prof. Troop: Wouldn't he have to take the pledge beforehand?

Mr. Van Deman: Well, that is true, that might be a good idea. But if a man has sense enough to go into the fruit business he should have enough sense to cut out these trees when they begin to interfere. Why not cut them out when the profit from the permanent ones is much greater than all combined?

Mr. Swaim: Won't the average tree be ready to come out by the time they interfere?

Mr. Van Deman: A great many will, and a great many will be in a healthy, thrifty condition right at that time, I might say. I would plant such varieties as the Wealthy, Oldenburg, Jonathan, Grimes Golden, Wagener, etc. These will come into bearing from five to eight. The Fall Pippin is very tardy in coming into bearing.

Now in regard to cultivating trees. I should expect to cultivate them for at least five or six years without having a crop in there, excepting something that would be thoroughly tilled during the summer months. As soon as the ground can be worked in the spring I would begin to cultivate the ground. When an orchard is young it is all right to plant corn in it. I would not plant close to the trees, but would leave a space. Potatoes and vegetables are good crops to plant. I want to plant something that must be tilled during the summer months of May, June, July and August, and then cultivation should as a rule stop. I do not believe in very late cultivation of apple orchards. I think five years will be the limit for this kind of cultivation. It is now time to stop cultivation and let the trees have room. I would not let clover stand more than one year. As I have said, the trouble is that most people try to take something out of the ground and off of the ground into the barn instead of devoting the soil to the orchard crop. That is the great stumbling block over which so many fall, and where they make their saddest mistake.

Nature has supplied the average farm with an inexhaustible supply of potash and phosphoric acid, but not nitrogen. But there is nitrogen in the air, but we might as well try to dip the ocean dry with a pint cup as to take the nitrogen out of the air. We can follow out nature's suggestion by raising cow peas, clover, vetch, and other crops of this sort, and get some of this inexhaustible supply of nitrogen. This is the one element that we pay more for than anything else when we buy fertilizer, and it is supplied right at hand. It fills every particle of space about us, and if we will only make use of it we do not need to go to the factory for fertilizers.

I would be glad to hear from anyone that differs with me, and should like to know just wherein they differ.

Prof. Latta: Mr. Flick, have you any questions to ask?

Mr. Flick: Do I understand Mr. Van Deman to say that this course will supply to the soil all that is necessary to keep up the fertility?

Mr. Van Deman: I think it will on the average soil. There may be poor soils on which it will not apply.

Mr. Flick: What about phosphoric acid and potash?

Mr. Van Deman: It is there.

Mr. Flick: This system that you described would not restore that if it was missing?

Mr. Van Deman: No, sir. It would not add one atom to it. There might be soils in which it might be necessary.

Mr. Flick: I think it is quite frequently so in this State, especially as to the acid.

Mr. Van Deman: It is more seldom than people think.

Prof. Latta: Mr. Flick, let me ask you if in your experience you have found it necessary to use phosphoric acids?

Mr. Flick: Yes, sir.

Prof. Latta: To buy them?

Mr. Flick: Yes, sir.

Mr. Van Deman: In Western New York they have made quite extensive experiments with this purpose in view of determining whether or not it is necessary to go to the fertilizer dealer and buy the acid and the potash, and I think in some cases they find that it is necessary, but in many cases they find that it is not necessary, and not profitable. When we buy potash in sacks in the form of fertilizers it will be nitrate of potash, which is the cheapest commercial form. By using this it is sometimes said that you can tell the difference in the rows. They found this difference in regard to the phosphoric acid. I think as a rule it is more necessary to buy that than the potash for the average soil in Indiana.

Prof. Latta: Are there others that have found as Mr. Flick has found that it is necessary to supply phosphoric acid to the orchards?

Mr. DeVilbiss: I have thirty acres in orchard and I could not get a stand of clover, and I hauled ashes to the orchard. I had three hundred loads of ashes and I put them on the orchard. I want to speak of alfalfa. I sowed about two and one-half acres of the alfalfa three years ago and I got an excellent stand. It was so thick I could not leave it stand another year. I had to have the hay so I cut it and took about four loads of hay to the barn. My idea is to continue this, and I have sowed another strip of four rows of trees, and it is growing just like weeds.

Prof. Latta: That applies to the question of potash, but not to phosphoric acid.

Mr. DeVilbiss: The clover will grow now where it hasn't grown for years.

Mr. Flick: How about the apples?

Mr. DeVilbiss: Come to the fair. The immediate results are a healthy condition of the soil, the growth of clover. This is about all we can do with old orchards. I have been doing this and I find it is ne plus ultra. Do you think if I continue this I will get too much nitrogen in the ground?

Mr. Van Deman: There is a chance of that. In Idaho and on the Pacific Coast they will not use alfalfa in the orchards there, and are condemning its use.

Mrs. DeVilbiss: Will they leave it on the ground or take it off?

Mr. Van Deman: They will not sow it there at all. They do not even have it there. They plowed it up and destroyed it. I would rather work with something else than alfalfa. There may be cases in which it will work all right, but as a rule I like something that is more temporary in character. It would grow for twenty five years and the roots will grow so big you can not cut them with an ordinary plow, and they are so mean to cut that I want to take a visit when the alfalfa is to be cut, and want a hired man that will not swear.

Prof. Latta: Mr. Flick, tell us how long you have been getting apples from these orchards—the reasons and the results. In other words show us your belief in the use of phosphoric acid. Have you followed this method or another method?

Mr. Flick: My orchard is now about thirty years old. It has been bearing a number of years. I have several varieties of trees. I have been trying experiments on my orchard. I try clean cultivation, and in this part I plant my garden. Another plot is for partial cultivation. Here I cultivate between the trees as far as I can without injuring them. The other plot I do not cultivate at all but allow it to grow up in grass and weeds. I make a pig pasture of this latter some part of the year. Now my apples are usually nice ones. I had a bitter fight with insects, but I find my fruit is growing better from year to year. At first my trees were not growing properly. I got all the manure I could get in the neighborhood and put it on. And I was like my friend, Mr. DeVilbiss. I had occasion to get some ashes for the hauling of them, and I hauled about four tons to the acre and spread it under the trees, all alike in each of the plots, and I found this very effective. The next year the trees were more thrifty, and the fruit was larger and had a better color. I have sowed cow peas and have excellent results. I have no fault to find with Mr. DeVilbiss' plan in his orchard, except as to the alfalfa. I can't say as to that. He has given the proper method and the general rule. Some

might take exceptions to clean cultivation on rolling land. This is our problem, "to find out what kind of soil we have, and then study out what to the best of our judgment it needs."

Prof. Latta: With reference to the phosphoric acid in the ashes. Do you know what per cent. there was?

Mr. Flick: I think about two per cent.

Prof. Latta: May your results not be attributed to the phosphoric acid rather than the potash?

Mr. Flick: Both, I think. The potash gives flavor and color to the fruit.

Mr. Van Deman: There is no form in which it can be added to the soil better than by the use of wood ashes. If I had the opportunity of getting ashes for the hauling, I would haul at night, and would feel like hauling on Sunday. If I did not I would think about it. Here is one who would haul all the wood ashes he could get on a place. You can not get too much.

Mr. Widney: You have struck a question that is of personal interest to me. It is a question that is very hard, and that is when an orchard is in a certain condition just what to do. I have a young orchard of ten acres. It is now in red clover. Since last season I have kept it in clover. We have taken one crop of hay off of the orchard. The second crop has grown up very nicely, and our intention was to place this orchard in potatoes. What do you advise, and what would you follow with the next season?

Mr. Van Deman: I think the potatoes are all right. After the potatoes I would plant in cow peas, even after the potato crop is off, which would be in July. Rye or Canada peas would give profit. You would have a wonderful crop of humus to plow under.

Prof. Latta: How would vetch do in such a case?

Mr. Van Deman: Excellently.

Mr. Widney: Isn't there danger in cultivating vetch of its becoming a pest?

Mr. Van Deman: I hardly think so.

Mr. Widney: Do you think Canada peas sowed the last of July would mature?

Mr. Van Deman: I would not plant them unless I was sure they would. I know some of the best farmers that plant peas in the fall. There is one thing about commercial fertilizer. It is put in such a form as to be immediately available. It is like setting a bowl of soup before hungry men. But if you did not give them soup they would hustle for something else. This is just what the tree will do. We can assist the tree by giving it land thoroughly tilled. Tilling the soil unlocks the potash and phosphoric acid and saves the necessity of going and buying that which is immediately available.

Mr. Widney: Have you any certain system of plowing a young orchard?

Mr. Van Deman: This is my plan of plowing a young orchard. Suppose this middle row was in apple trees. I would break this row thoroughly this year, making a deep furrow next these other two rows. Of course I would plow so as not to injure the trees. Next year I would reverse the back furrow. Use this alternating plan, and in this way keep the ground about level.

Prof. Latta: This subject is very interesting, but I think we must close at this point and take up the next topic.

We will now take up the next topic. This is by E. H. Williams, of Indianapolis, Indiana. He has been in the commercial fruit business for years and can speak from intimate acquaintance on this subject—the subject of market and also of storage.

E. H. Williams: Mr. Chairman, Ladies and Gentlemen—I have noticed this fact in all the speakers preceding me, and that is they emphasize one feature of their address, and that is the necessity of knowledge and information on the subject before us. Solomon said, "In all of your gettings, get wisdom." I am like the persons who wrote the resolutions. I am sorry there are not more of the young people here to take what is said out over the country. If I understand the object of this meeting it is for the purpose of creating an interest in horticulture in this part of the State. If I may judge by the land and the location of the country, this country is very well adapted to horticulture. This occupation would be much more profitable than some of the industries that are being carried on here. Now I have taken the position that this meeting is for the purpose of awakening an interest in the industry that would be of great benefit to this part of the State, and perhaps the first thing that might suggest itself to us is the market. When the average American looks at a question like this he looks at the financial standpoint and if he does not see dollars and cents in it, his interest lags, and we have

to create an interest before we can get people to engage in an industry. This would be the first question. Is there a market for my fruit if I go into the horticultural business? Fifty years ago fruit culture was not known in a commercial sense. It has been developed in the last half of the century, and even of that time perhaps within the last twenty-five or thirty years. This business has been developed until it is now one of the largest industries in this country and one of the most profitable. There are three important factors that have brought this about. They have entered into creating the market and developing the fruit industry into a commercial size. The first of these is the railway, the next the canning industry, and the third the refrigerator, or cold storage. These are the three elements that have come into the fruit business and have developed it to wonderful proportions. I remember when at Indianapolis there was only one man in Marion County that was growing strawberries for commercial purposes, and now there are hundreds of them. It is being developed all over the State. Fruit which we once thought could not be marketed is now shipped long distances. We did not think the red raspberry could be picked and sent to market, but now they are shipped everywhere. Our market is now almost without a limit. The canning industry came in for the purpose of taking care of the surplus, and is a factor we should not lose sight of. The quantity of apples and berries and fruits that have gone into tin is beyond measurement. I wish we had better figures so that we could know the amount of fruit that goes into tin. This is helping to save the surplus all over the country. I am perhaps better posted on the tomato than any other, and know more about how many go into tin. I can remember when the tomato was placed on the shelf with the pomegranate and the children were told not to handle it, because they thought it was poison. Now, what is the result? Last year fifteen millions of bushels went into tin, to say nothing of the raw consumption. So you see what we are doing for the market on this line. So there seems to be no opportunity to overstock the market, for when we have too much we have this method of storing things away for future use. The amount of money interests us. When you take fifteen millions of bushels of tomatoes it represents practically fifteen millions of dollars. Now this is just one item. So you see this fruit business and vegetable business is growing into wonderful proportions. It has brought a vast amount of money into our country, and we are making use of land that is not fit for anything else. This market stands as wide open surely for everybody as it does for Indianapolis people. We are engaged in planting out orchards of different kinds of fruits, and if more people would stop farming and go to raising fruit they would find that their farms

would pay much better. It seems to me if I were writing on the gate post I would write "Ichabod." Men are making failures because they do not obtain the knowledge that is right at their very doors. Many of you here are experienced horticulturists. With this market before us comes another question that is of great importance in this industry, especially to men who are engaged in it for the first time, and that is the marketing of the fruit. You can grow the finest apples grown in the State, and you can grow the finest berries, and you can destroy the entire value of them by putting them on the market. There is more in my judgment in knowing how to market a crop than there is in growing it. A man may be able to grow fine fruit but may destroy his profit when he comes to marketing it. Take this as an illustration. A man wrote to me once and said: "I have some very fine Maiden Blush apples. What can you do with them?" I wrote back and told him that I could sell them for him at a profit. This man shipped the apples to me. I was indignant when they arrived to find that he had shipped them in a sugar barrel without even sweeping the sugar out. He had sacks over the top, and the apples were loose and had rolled all around in the barrel. They were really nice but they did not look very nice fixed up in this style. There were five barrels of these and I put them up at what I thought they ought to bring and I didn't get a bidder. I thought I would try my hand so I ordered them sent to the shop to be rebarreled. I took other barrels and repacked them. Out of the lot I got seven three-bushel barrels and I threw away all of the ones that were bruised. I now put these on the market and they sold as fast as I could roll them out. I got much more for them than I could have under the other conditions. There was the profit destroyed for the man. As I have told you, these were the finest Maiden Blush apples I had ever seen.

I had another experience about like this with peaches. There was a certain party raised quite a number of peaches and he wanted me to handle them for him. I consented to do it. This man happened to be a relative of my wife, so I thought I would show him what a bright man his cousin had married. I told him how to put the peaches up and when they came to me I was surprised. He had gone into the woods and cut down a tree and hollowed it out and put boards across the ends and put the peaches in there and nailed the covers over the sides. I was very much surprised when I saw how these peaches had been shipped and I could not handle them in this manner so I telegraphed the man not to ship any more peaches. He wrote me back a letter that was not very complimentary, and, if he was a relative om my wife's, we have never corresponded since that time, and I think he set me down as the biggest fraud he ever saw. I can't help that. If these peaches had been

shipped in the right kind of packages they would have brought the man a profit. As it was they were entirely lost. This is the method usually adopted—that of selling through the commission man. There are dishonest commission men, I am sure. Well, I presume there are. I don't know whether I ought to say that or not, but of this I am sure, and that is there are good commission men, and these men will look after your interests and will give you a great deal of information that will be of vast benefit to you. They will give you advice that will make you dollars and cents. This brings me again to the question of packages. This question has undergone quite a change in the last few years, and it should undergo more. This has been brought about on account of cold storage. Part of it is on account of the different markets. Different markets demand different packages, but I dislike the non-uniformity of the packages. There should be no snide packages. The Horticultural Societies should see that packages should be uniform; they should be just a certain size and no others ought to be permitted. When they go to the consumer it would be much better. I went into the market the other day and asked them the price of berries and at one place I was told that they were ten cents a quart. At another I was told that they were fifteen cents a quart. I asked him if he called the measure a quart. He seemed to think so, and I told him I would give him ten cents for a quart of the berries. He agreed, and had to sell me three boxes before they filled a quart. The honest man is working at a disadvantage until he establishes his reputation. Every man ought to have a brand on his box, either his name or the name of the farm on it in order to guard against snide packages. They would have to fight hard to establish their reputation, but in time it would come. There is a man in Indianapolis, and Mr. Flick knows him, who brings currants to me, and I have sold every currant before his wagon was in sight at $2.50 per bushel, more than currants were bringing that were shipped in. His fruit being all the same. You did not find bad fruit mixed in. You will find that the best fruit will bring the best price, and if you are going to sell fruit you might just as well get the best price for it. Do not start in with the idea that you can put a stove pipe in the middle of a barrel, fill it with small fruit, and have fine on top and build up an honest reputation. This will work once only. You can fool all the people some of the time, and fool some of the people all of the time, but you can't fool all the people all the time.

Now in gathering fruit, gather it at the right time—when it is ripe. You will have to govern this of course, by the distance from the market. If you are going to ship your fruit to New York or Chicago you will have to pick it sooner than if you were going to market it right at home.

You must bear in mind that the time of transportation will ripen the fruit to a certain extent.

When you are packing fruit, pack it tight. You can't hurt apples by packing them tight. You may mash them flat on the bottom, but when you take them out of the barrel they are just as sound as they were when you mashed them.

Mr. Van Deman: What do you think about the apple box?

Mr. Williams: I think it will supersede the barrel. The barrel is becoming very expensive, and the box has proven that it assists in the sale. People will buy a box when you can't persuade them to take a barrel.

Mr. Swaim: Does the box have any advantage over the barrel in cold storage?

Mr. Williams: That is a question to come in later. I was on market in Indianapolis the other day and I found five different sized boxes in the same crate of peaches. I went to one stand and asked him what he asked for a box. He replied, "Twenty cents." I asked another what he asked for a box and he told me "Fifteen cents." I bought this one for fifteen cents, and then went to another fellow and asked him what he charged, and he told me "Twenty cents." I told him that I had just bought one for fifteen cents, and he assured me that if they were the same size he would give me his box of peaches, as he thought mine was a smaller size than his. I thought they were the same, and pulled the box out to see, and I found that he was right, for his box was the largest, and that in the end it was the cheapest to buy the twenty-cent box. You see, it is hard to discriminate between the sizes. The Horticultural Society should see to it that a law is passed which provides that these boxes shall be uniform. There have been laws passed, but they have never done any good.

Cold storage has been introduced recently. It is very important for this reason: It used to be that when the apple time came they had to be sold, and ofttimes there would be too many on the market, and of course the price would be low. Now, in a case like this they can be put in cold storage and sold when we get ready to sell them. They can be held off of the market until the market restores itself to natural conditions, so that cold storage, which is being established in every fruit section, is changing the method of marketing fruit. So if you have a large crop of apples there is no danger of your losing on it. People go out and buy the fruit and ship it to a large cold storage plant and save it until such time as it is necessary to put it on the market. You are relieved

of your surplus fruit in that way very largely until such time as the market will take it at a profit to you. You are not placed at the disadvantage of having to put your apples on the market whether you want to or not when there is a cold storage plant. You can ship your apples to a commission man in Chicago, Indianapolis, or New York City, and say to him that you wish your apples held until January or February or March. He will put the goods in cold storage and hold them.

Now, this question of boxes is becoming quite popular in cold storage houses, because the boxes are easily packed away, and they do not occupy so much space. This is in the experimental stage. Apples are usually kept in cold storage at 31° or 32°. If I were going to keep them until spring I would put in at 18° or 20°. They will freeze clear to the core, and remain that way until they are ready for the market. I would keep them at that temperature until they are ready for the market. These are conditions that are being developed very rapidly. The Government of the United States, as well as the Experiment Stations are taking this up, and by a little energy on your part you can get bulletins on how to do these things. It doesn't make much difference how far you ship fruit. You can ship it almost any distance you want to and it will arrive in good condition. Glutted markets can be avoided to a very great degree. Of course, the market will sometimes become congested with the best that you can do. I believe that cold storage will be a greater success if you will run the temperature down instead of up. I do not think that freezing an apple hurts it at all.

Mr. Flick: Doesn't this freezing of the apples in cold storage injure the keeping qualities of the apples when they are brought out?

Mr. Williams: I want to say in the first place that I would bring up the temperature gradually until I got to the temperature at which I expected the apples to be placed when on market. I once ordered a car load of apples from Chicago and they were shipped in an open car, and when they got to Indianapolis they were frozen solid clear through, and I'll tell you I was a mighty blue man. We put them in the cellar, and let them stay there two or three weeks and then put them on the market. When they came to us they were frozen so hard that they slid all around in the barrels, and did not seem to fit any place, but when we went to them after they had been here two or three weeks they were as tight as they were when they were first put into the barrels.

I had another experience last year. There happened to be a great many Ben Davis apples, and I packed twenty-five or thirty bushels. We put them in the ground, and they were not covered very well, and every rain that came wet them through. They laid there and all

froze as hard as a bone It would thaw then freeze then thaw and freeze. I supposed the apples would not be fit for anything. I left them there until April, and when I took them out they were as crisp and nice as could be. They didn't commence to rot until the latter part of May. I don't believe we lost a peck of apples until that time. I think we have found that cold storage will help us. I'm going to quit, but if you care to ask me any questions I will be glad to answer them.

Mr. Grossman: Do you keep the temperature as low as 18°?

Mr. Williams: Yes.

Mr. Swaim: Have you experimented in keeping apples any length of time at that temperature?

Mr. Williams: Not any great length of time.

Mr. Swaim: Isn't the temperature usually 31° or 32°?

Mr. Williams: Yes, just below freezing. If there is an insect there the 18° will hold it there, and there is no change apparently in the apple. But my experience in taking apples out of cold storage is that this 31°-32° will hold the insects. If you will go to Indianapolis you will find a great many wormy ones there. Insects can not do very much on an apple when it is frozen.

Mr. DeVilbiss: Do you think it would be practical for a man who had fifteen or twenty acres in apples to attempt to build a cold storage on his own premises?

Mr. Williams: That is a question I can hardly answer. I would rather infer that someone else had some apples around there if this man had fifteen acres, and in that case they might co-operate and go into partnership and build a cold storage. They might do this for the benefit of themselves and their neighbors and make money out of it, too.

Prof. Latta: You have struck the keynote on co-operation, but our people are asleep on this question.

Mr. Grossman: Have you come to any conclusion in regard to the cause of the rust and the scald? Is it especially noticeable on certain varieties or on all varieties? Does the temperature make any difference?

Mr. Williams: I think the temperature has something to do with it. I am inclined to think it has all to do with it. Experts have not been able to decide what is the cause of the scald on the apple. It is being experimented on in different temperatures, and I think they have dis-

covered that certain varieties are affected with the scald much more easily than other varieties.

Mr. DeVilbiss: Have you ever noticed them scald when they are packed in boxes?

Mr. Flick: Yes, I have.

Mr. Williams: I have not seen the scald so extensive when they are packed in boxes except on coast apples. Our native fruit has not been handled very much in boxes yet, but it is very successful.

Mr. Flick: There will be a great deal more known about this cold storage business after the close of the World's Fair in St. Louis. We have fruit from every part of the United States there. At the close of the Fair we will have a record of the different varieties shown there; the different conditions under which they grew, and the different treatment of the orchards. We will have a record that will enable us to tell something about the influence of temperature, and the influence of boxes. and all these things upon cold storage fruit. So at the close of the Fair we will know a great deal more about this. Some of these things have already been investigated pretty thoroughly, and I think the results of our investigation will show this. Apples should be picked before they are dead ripe. Some varieties are much more susceptible to scald than others.

Mr. Williams: In regard to running the temperature down below 30° or 31°. It has been found that it stops all the insects from work and keeps them still. It stops the diseases and the insects that may be in there, but when this fruit is brought to market it will not keep; it will lose its flavor. These are two very vital points. Fruit when taken from the cold storage should be consumed immediately. It may be kept a few days until it can be disposed of at a profit.

Prof. Latta: Isn't that an argument for the smaller packages?

Mr. Flick: Yes; at the World's Fair the fruit is almost all packed in bushel boxes. It comes out of the cold storage in a much better condition then you would imagine. Week before last there was taken out of the cold storage at St. Louis some Indiana fruit which had been put into cold storage last fall at Indianapolis, and shipped to St. Louis in April last, and we found it in perfect condition. One barrel which was wrapped came from this neighborhood. Another which had no wrapping was entirely gone down. It was not the same variety of fruit, of course, but that doesn't seem to make much difference.

Mr. DeVilbiss: Do you think it is better to sell to a commission man or to private parties?

Mr. Flick: I would not advise anyone to hunt up a private party to whom to sell their fruit. If you have an honest commission man, and most are that kind, the best thing to do is to let him sell the fruit.

Mr. Williams: I had a man that tried to sell to a private party one morning. He came to my office and told me that he had sold his berries. I asked him what he got and he said $2.00, and that very day I could have given him $2.50. So you see how it usually comes out.

Mr. Stanley: I would like to ask this question. Is there any case on record where a commission man failed to pay for any produce that he bought?

Mr. Williams: Yes, lots of them.

Mr. Stanley: Is it any worse this way than to sell through a private dealer, or a commission house?

Mr. Williams: It is usually better to sell to a commission man, as you are much more safe than to be selling to Tom, Dick or Harry.

Mr. Stanley: I think we should make ourselves safe with a private person just the same as with a commission man.

Mr. Williams: Suppose you should ship your fruit to a private party, and he had all he needed. What would you do?

Mr. Stanley: I would consider it a poor business proposition to ship the goods before they were sold. I would know that they were sold before I would make a shipment.

Mr. Widney: I have had some experience along this line. I tried to market some potatoes in Cleveland. I found this market glutted, and the Chicago market glutted, and the market at Pittsburg full, and I found an opening at Cincinnati, where they wanted some potatoes. I should just like to ask some of these gentlemen who do not believe in commission men how they would have gone about the matter of selling these three or four cars of potatoes? I went to Cincinnati and investigated the commission men, and then went and sold my potatoes, and I saved from fifty to seventy-five dollars in the way I packed the goods, and I got my idea from the commission man, too. They had plenty of barrels, and so he told me to load my potatoes in bulk. Now, how would you have gone about selling those potatoes without a commission man? That is what I would like for someone to explain to me.

Mr. Swaim: It seems to me that this discussion has arisen on account of a misunderstanding. I do not think Mr. Stanley meant to insinuate that he would dodge the commission man in any way, he was just talking of selling outright and not selling to a commission man. If he got more from the commission man he would sell to him just as quick as anyone else.

Mr. Williams: In a great many sections this is being done: When there are three or four or five cars of strawberries going out, probably there will be a man standing there who will ask you how much you will take for your shipment. They are speculating. They sell to the dealers in smaller places. He lets the grocer sell them on a commission, so the grocer takes no chances at all.

Mr. Swaim: In justice to the strawberry grower in the State of Indiana, I believe I ought to add that I think Mr. Williams is surely mistaken when he says that it took three quart boxes of berries to fill one quart measure. They were certainly pint boxes. If that was the case I think he is right. I do not believe there is any strawberry grower in the State of Indiana that would do such a thing.

Mr. Williams: I did not even say that these were Indiana berries. I would just like to ask the strawberry growers, however, if their boxes hold a quart?

Mr. Swaim: The Star boxes hold a quart, for I have measured them. They have sixty-eight cubic inches. There are several different kinds of boxes, however. Three short pints will just make a quart. This makes quite a difference.

Mr. DeVilbiss: When I sell the skimpy ones I always sell them for a light quart.

Prof. Troop: I want to say a word on the box question. I believe, as Mr. Williams says, that this Horticultural Society and the societies of this State in every locality should take up this matter—this question of uniform packages. I believe the time is coming when the State of Indiana ought to have a law requiring all packages to be of a uniform size. If they are not of a uniform size it should be so marked on the box. It is a fact that you can go into the market in any town in this State where berries are shipped and find two or three different sizes of boxes. And the funny part of it is that they are all put on the market as quart boxes. Many of them are snide quarts. They hold very much less than the others. At the fruit stands and at grocery stores they will charge you just the same for them as the others. There are very few

that know the difference. I think the bottom is farther up on some than on others. I have tried many times, and you take three of these wine quart boxes and it will take only two full quart measures to fill them. That is the difference. And, as I have already said, I believe some action along this line should be taken, and there should be a law compelling the manufacturers of boxes to make them of a uniform size. If they are not full quarts they should be marked short, and marked in a place where everyone could see it, so that they would know they were getting a short box. Then no one could make you believe they were all the same size.

Mr. Williams: I think the short boxes should be cut out altogether. I think the short boxes should be eliminated entirely, and we should have uniform boxes. They are not only in berry boxes, but other kinds of boxes as well.

Prof. Latta: This is a proper subject for a resolution if someone wishes to present it.

Prof. Troop: I think this should apply to baskets as well as to boxes. I want to tell you this little incident. Last spring the grocerymen began selling potatoes by the pound, sixty pounds to the bushel, and they sent them out in baskets. I bought three bushels of potatoes and the three bushels fell short forty pounds. That is not right.

Mrs. Harvey: I came to Kendallville last spring and bought a bushel of peaches in a basket. I took it home and took the same basket and filled it with pears and brought them back to town to sell, and the very same man said, "This is not a bushel; it is only three pecks." I said, "Yes, but it was a bushel when you sold the peaches to me."

Mr. Lodewick: I want to ask if it would be fair for us to have certain kinds of packages when the fruit that is shipped in from other States is sold in the smaller measures?

Mr. Williams: I would like to answer that question. That was the objection used against this to the State Horticultural Committee appointed to draft a bill for the Legislature. It died a-borning, and I have never heard of it from then until now.

Mr. Lodewick: I notice there is not much difference in the quart boxes.

Mr. Williams: The consumer will notice the difference, and will buy the fruit much quicker if it is in the larger box. You should establish a reputation that will stick to you.

Prof. Latta: We will now hear from Prof. Troop.

Prof. Troop: Possibly most of the people understand many of the insects and diseases affecting the orchard, and I brought along this chart to illustrate some of the things that I want to say, and we should first keep in our mind when we are trying to fight insects of any kind that there are two classes of insects so far as their getting their living is concerned. One class of insects eats its food and the other class sucks its food. This class of insects that affect the apple will eat the foliage, another will eat the fruit. Now this class of insects can be destroyed, or held in check, by the use of some arsenite. Paris green or something of that kind. Anything that kills by being taken into the stomach will kill them. The other class that may affect the foliage or stem of the fruit is the class that gets its food by sucking. It does not chew its food, but simply pierces the tissue of the leaf or stem or twig and sucks the juices. You can not kill these bugs with Paris green or arsenic or anything of that kind. It must be destroyed by some substance that will kill it by coming in contact with its body. I am often asked how to kill these bugs. One man told me that he found his trees were literally covered with them, and that he put Paris green on the trees, but that it didn't have any effect on the bugs whatever. He said it seemed to him as if it only put life into them. Of course, it wouldn't kill them. He didn't understand what he was trying to do. This particular point is not thoroughly understood by a great many people. They know how to manage anything that will eat the foliage, but a great many have an idea that Paris green will poison anything. This is not true. There is another insect. the scurvy scale, that is found in the orchards everywhere. They make the branches look as if they might have been whitewashed. Paris green will not kill them. You might use something like soapsuds or something like that. You will have to use something that comes in contact with them, for they will not eat anything and take it into their stomach. You may know something about the codling moth. I wonder how many fruit growers here have spray pumps and spray their orchards in the spring of the year? You might put into practice all the theory that has been advanced here this afternoon in regard to cultivating fruit, but if you omit this one thing you will make a failure of it. The time has come when the apple has so many enemies that you have to fight and fight from the start to the finish in order to get perfect apples. Spraying and spraying intelligently will assist you greatly.

Mr. DeVilbiss: You do not mean to say that you can not get perfect apples without spraying, do you?

Prof. Troop: I can hardly say anything else. If you do not you will find a great many insects and diseases affecting the apple. There are but two of the latter that amount to much: The apple scab and the orange rust are very bad in some sections of the country. It seems to be much worse in some places than in others. Bordeaux mixture is a very good remedy. The time to spray is about the time the buds are swelling. This is when they get in their work. This should be kept in mind if you are spraying for any of the plant diseases. Spray before they get in their work. Kill them before they get into the tissues. After they get into the tissues there is not much use of spraying. You can't stop it. This is true will all of the diseases. This Bordeaux mixture is all right with any fruit, if you will only spray at the proper time. I have heard people say it didn't do any good to spray, but I have always thought they did not spray at the proper time. As I have said, in spraying for these two diseases, spray early before the spores get root in the tissues. You should spray two or three times, but the first time should be about the time the buds ars swelling. I haven't found a mixture that is better than the Bordeaux mixture.

Mr. Swaim: What is you opinion of using copper sulphate in solution?

Mr. Baxter: This sticks to the tree better if you use it with lime.

Mr. Swaim: Will spraying at the proper time destroy all the insects that bother the apples?

Prof. Troop: Not all.

Mr. Swaim: I hardly mean just that. Will it affect all specimens of insects?

Prof. Troop: It will.

Mr. Swaim: How about the Rose beetle?

Prof. Troop: I thought you referred to those affecting the apple. This is very difficult to reach with anything. They are the worst enemy we have. We have been trying all kinds of methods for this, but we haven't found anything very effective as yet.

Mr. Van Deman: There is nothing that will kill it.

Mr. Baxter: I have had some experience along this line, and lessened the number quite perceptibly. I used Paris green and sulphate of copper, and lime and sulphur. I thought perhaps they might get it into their beaks. I have found quite a number of them dead under the trees that I treated. It seems to me they are the worst insect enemy we have.

Prof. Troop: They could be destroyed, but the thing is to destroy the insect without destroying the tree. Some things will kill the foliage as well as the insect. A great many of these insects hibernate. When they go into the ground it is very difficult to do anything with them. Many hibernate in the rubbish and dry grass and leaves. This is one reason why clean cultivation is so good. If they are hibernating in the leaves and the leaves are cleaned up and destroyed they are destroyed in them. They are hard to destroy.

Mr. Baxter: I thought I killed some of them on account of their being under the trees, but they might have been ready to die.

Prof. Troop: The probabilities are they were ready to die.

Mr. Baxter: Have you any cut that shows the Rose beetle?

Prof. Troop: No, I haven't a cut of that.

Mr. Baxter: You will remember I sent you some of these insects. They were entirely new to me.

Prof. Troop: They are of a yellow brown color with long legs and a long snout.

Mr. Baxter: Why is it that we can not kill them?

Prof. Troop: I can not answer that. These beetles are very difficult to destroy.

————: About how large is it?

Prof. Troop: About one-half inch to three-eighths of an inch. It is of a brownish yellow color, with long legs.

————: What can be done to prevent pear blight or tomato rot?

Prof. Troop: That is something the United States department has been working on for years.

Mr. Van Deman: There is nothing that will destroy pear blight. All you can do is to try to destroy the source of the disease.

Prof. Troop: You should be very careful in cutting off pear blight wood, so as not to inoculate the other parts of the tree if you use the same knife again. It becomes a difficult matter to stop pear blight when it once gets started. Some varieties are affected more and some less.

Mr. Van Deman: In the apple it usually doesn't affect a shoot more than a foot.

Prof. Troop: No, not more than that.

Mr. Grossman: My Yellow Transparents are blighted so that I fear they will die.

Prof. Troop: That depends on the locality. I have had so many tell me that they are having serious times with their Yellow Transparent, and I have some right in among the other trees that are blighted, and the Transparents do not have a bit of blight on them.

Mr. Grossman: I would like to know whether there is any difference in the blight between the orchards that are cultivated and the ones that are sprayed?

Prof. Troop: Someone that has tried that can answer that question. There is a great deal of difference in the varieties that blight, and our orchards are made up of two or three trees of a kind. Some orchards are cultivated and some have been sowed down in grass for years. I believe that those that have been cultivated all the time have blighted worse this year than others.

Mr. Grossman: That has been my observation. I have noticed that the crabs have blighted seriously this year, and instead of stopping it is getting worse and worse.

Mr. Flick: Some recent investigations by the Commission appointed by the State of California has recommended certain things with regard to blight. First, that manuring pear trees should be avoided; second, that the trees should be starved partially.

Prof. Latta: I think with a few announcements we might close.

Mr. Feebles: I move you that we give a vote of thanks to the people of this church for their kindness to us while we have been here, in the use of the church and the furnishing of the special music we have had.

Mr. DeVilbiss: I second the motion.

(The motion was carried.)

Prof. Latta: I think all of you here are interested in this work, and you have certainly heard some good talks here within the last two days, and it will now rest with you to do the rest. You can carry out these ideas if you like, and put them to practice on your farms or in your orchards. This is one of the objects in starting these meetings. If they are of service we want the meetings to be held. During the coming winter we will hold more of the Farmers' Institutes than ever before in the history of the work. The plan is to hold the institutes in the county in proportion to the area, and the number of days will vary from

two to five in the largest counties. I think this county entitled to four days, according to the area. I hope the people of this county will rally to the support of Mr. Stanley, who takes up the work for the first time, and needs your co-operation to push the work forward to the success that it ought to have. This is a sample of the work that is being done. I think you have had a high-class sample. Now, it is up to you to make use of the sample. It is simply a pattern for you to follow, and I trust that you will go out with the determination to support your chairman and make these meetings that are held in your own county a success during the coming winter. These remarks will apply to all the counties as well. The meeting will now stand adjourned.

NATIONAL FRESH FRUIT EXHIBITS.

PAPER READ BY WALTER S. RATLIFF, BEFORE THE WAYNE COUNTY HORTICULTURAL SOCIETY.

When county fairs are held, special efforts are made to secure exhibits of fruits of various kinds from the districts in which these local displays are made. These may include many kinds of fruits, or they may embrace only such varieties as are available at the time of these exhibitions. In the limited space generally allotted and for the want of time that is necessary in the collection and care of exhibits, together with the light premiums generally offered, the displays are far from being extensive.

In State exhibitions, where fruits are shown, grown in the several counties of each State, more effort is made to make and maintain larger and more varied exhibits than are found at local fairs. In these, special efforts are made to exhibit a larger number of varieties of the staple kinds of fruits, as well as plates containing the best specimens of each. In order to do this, later methods of keeping fruits out of season have been employed in many cases by the exhibitors. This materially enlarges the usefulness of State fairs over local ones wherever held, as naturally the number of people attending them would be larger, stimulating greater effort to make these State exhibitions more complete.

In national fairs, interest is not only shown by the people of the several States and Territories, but by foreign countries as well. And from the care taken by individuals and the funds expended by corporations and countries in their management, much is expected to be gained therefrom.

The present World's Fair at St. Louis is looked upon not so much from the extensive preparations and exhibits that characterize it as the greatest of expositions, but from the character of the displays and the

means employed to maintain them. It is true that in former international shows some effort was made to preserve fresh ripe fruits by the liquid process, but it has been left to the present fair to demonstrate the system of other means of preservation.

At Chicago a few States had displays of fresh fruits in the natural state aside from the citrous kinds and grapes. At Buffalo more concerted effort was made, but the plans largely failed through a partial failure in the fruit crops of the United States. At Paris many of the awards for fruit were given to American exhibitors who sent their fruits abroad, which was not only gratifying, but largely repaid them for making exhibits so far from home.

The extent of the present exhibit can be surmised when it is known that thirty of our States and Territories, with Canada, have made the entire exhibit. No foreign country has any fresh ripe fruits on exhibition* This is quite a disappointment, as foreign fruits are much in demand for comparison with our own, as to size, color and flavor. Upon the tables in the Horticultural Palace more than 20,000 plates of fresh fruits are daily maintained, aside from the large quantities used in designs and oddly-arranged decorations. On these plates are placed five of a variety, of equal size, color, and free from imperfections.

Each State elects the qualities upon which its fruits are to be judged, and upon these the results of the awards largely depend. Indiana takes uniformity of size, good keeping qualities and unequaled flavor. Some of the Western States elect large size, high color and good keeping qualities, especially is this done as compared with fruit from the Central and Eastern States, as the texture of flesh and flavor seem to belong to the latter.

Several exhibitors have profited by former exhibitions and have made the best showing possible, while several States never before entered an international fair. Most of the exhibits not only include last year's crop, but of the present, as fast as it is matured. This will give opportunities to observe shipping qualities of many varieties when transported overland, aside from the use of the cold storage system.

Virtually all of the principal kinds of fruits can be seen on exhibition, and most of the principal varieties of each. There are to be found on the tables: Choice bunches of grapes from New York, beautiful peaches from Arkansas, large limes from Arizona, excellent apples from Indiana and delicious oranges from California. This accounts largely for the smiles and pleasant faces of the visitors in the Palace, as there are thousands of specked apples, peaches, bananas and oranges given away daily to them by the generous exhibitors. Two large wine companies of New York State have grape juice "on tap," the revenue from which

*Mexico, Canada, Honduras had fresh fruit exhibits.—Secretary.

doubtless largely reimburses them for the expense incurred at the building, as many of the visitors enjoy sampling the juice.

Exhibits of fruits demonstrate the value and efficacy of the present cold storage system, which, as has been stated, has attained its high character within the past few years. Through a long line of experiments conducted by individuals, experimental stations, companies and the Department of Agriculture, covering many years of work and study, the present system has been perfected. So near has it become satisfactory that the fruit men can and are relying on its efficiency.

By this system the season of fruiting has been lengthened. Formerly perishable fruits lasted from a few days to a fortnight. Now, with proper care, the supply of such may be continued for weeks or months after picking.

This system avoids overstocking or glutting the market. It materially lessens the danger of a reduction in price, as they can be marketed as the demand may require, which not only protects the grower, but the merchant as well. The expense incurred in handling fruits either for fair display or marketing is not exorbitant, in fact, such goods can be handled and delivered without materially advancing the price to the consumer.

These exhibitions demonstrate the necessity of a proper selection of fruits. They should be sufficiently ripe and of typical color. Over-ripe specimens become mealy, scald more easily and "go down" or decay too soon. Those that are unmatured never color properly and lack much of that characteristic flavor that is so much desired. When the specimens are of good size, free from insect ravages, scale and scab, properly matured and colored, they, during storage and after being placed on the tables, properly ripen and color and maintain their good qualities.

Some diversity of opinion exists relative to the time gathered fruits, such as apples, pears, quinces and apricots, should be placed in the packages for storage. Most men believe that but few days must elapse between picking and storing. Some advocate a sufficient length of time to permit such specimens to show evidences of decay, that would not otherwise keep well. The fruit is usually wrapped in two kinds of paper and packed. The inner wrapper is a tissue or soft one, the other an oiled or parchment paper. The name of the variety of fruit together with the name of the grower and his address is placed inside the inner wrapper.

In nearly every case, when apples and pears were kept in barrels, those in the central part "heated" or decayed more or less, indicating that boxes should always be used, in bushel sizes and less, in which almost invariably the fruit kept uniformly throughout.

When boxes are removed to storage the temperature is then kept at near 32° to 34° Fahrenheit, which has proven most satisfactory. On the removal of the boxes from cold storage the lids are removed and the fruit is permitted to air at least eight hours before being removed from their places. This is done for two reasons. The specimens are said to sweat in warming up and the inner wrapping being a soft tissue paper, absorbs the moisture as fast as deposited, and the oiled wrappers keeps out the air.

Requisitions are given, usually once or twice a week, on the stock in cold storage, and the exhibits are thus maintained. In this way as certain fruits are needed they can be supplied in time to keep up a continuous exhibit.

When fruits are placed on the tables as many plates of five specimens each as can be secured of each variety that possess merit are selected and set aside to be passed on by the National Jury of Awards. There is an entry made to the Chief of the Division of these plates, when the jury is advised to inspect the same and file his or their decision for future reference. It might be said that Indiana was the only exhibitor that had its dislay in place in the Palace of Horticulture on the day of the opening of the fair, thus securing the first one hundred points in the grand contest for a medal offered by the division. The judges in their reports showed that Indiana had on exhibition the best plates of Wegener, Mann, Winesap and Newby apples yet shown.

These exhibitions directly indicate the keeping qualities of fruits. This is especially seen with the pomaceous and stone sorts, such as the apple, pear, quince, apricot, plum and peach. But as the staple kinds, such as apples and pears, are considered more in a commercial way, it is but natural that they should receive closer consideration. With the apples, the Salome, Fink, Winesap, Mann, Ben Davis, Northern Spy, Jonathan and Rome Beauty deserve special mention, as many samples of these varieties remained longest on the tables when taken from cold storage. It was found that the Grimes Golden, Wealthy, Stark, Fallawater and Yellow Bellflower retained much of their beauty and good qualities, but held up poorly when placed on the tables.

Among the pears late autumn and early winter varieties kept fairly well, yet it is a fact that the solid, firm, good-keeper Kieffer ruins in cold storage. It becomes black in color, insipid in taste, and worthless and rots quickly.

Most peaches are too tender to withstand the handling incident to packing and storage, and it is thought that they can not be kept satisfactorily for commercial purposes.

Grapes and quinces do fine if not too ripe, and as they add much to

the fruit displays they are expected to enter largely in the consignments this summer and autumn that will be sent to the fair.

Citrus fruits, such as oranges, lemons, limes and pomelos have long since proven capable of withstanding the shipments with but little danger, and no labor and expense has been spared to make it one of the greatest displays ever given of these kinds of fruits.

National fairs furnish the best means of comparison and study of fresh ripe fruits, as the choicest specimens available are secured for such displays, and, laying aside those kept in liquids, no plan could be devised to be of greater value. In these opportunities for study not only the growers and merchants are interested, but the consumers as well. The chance to study the same variety grown on different soils, with a diversity of climate, moisture, protection and care, cultivation and spraying is there supplied. It was the intention of the government pomologist to have a series of tables where the same varieties grown in the several States could be placed under his direct supervision, and have careful comparisons made.

Many of the older varieties have not of late years been profitably grown and the exhibits of newer sorts is of great value to the public generally. New ones are being produced each year, and often valuable seedlings are lost by not being known or for want of an enterprising individual to introduce them. Some varieties that have been known for many years have of late attained much prominence in the commercial orchard and command much attention now.

In these exhibits the grower has an opportunity to advertise his business to the commercial fruit man by exhibiting what he can grow. In this way he can permit his fruit to be sampled, which is an evidence of its value, often convincing his friends of its unquestionable superiority.

With a knowledge of where certain kinds of fruits attain their greatest perfection commission men can arrange, often for weeks ahead, for the purchase of the products of entire orchards, which is of considerable importance to both shipper and grower, as in this case the fruit can be gathered and shipped when in prime condition, which is one of the essential requisites for its keeping and in the retention of its valuable qualities so highly prized by the consumer.

In concluding, it might be stated that through the aid of the cold storage system these international exhibits are made possible, and from the bulk and character of the fruits displayed there can be no doubt that the standard of excellence attained in the varieties thus grown at present is equal to any formerly produced, and, considering the extensive field of operations of horticulturists, there may be expected even greater possibilities in the broad and ennobling field of horticulture.

REPORT FROM SECOND HORTICULTURAL DISTRICT.

BY W. C. REED.

As to general conditions there seems to be considerable improvement in horticultural knowledge, so that the average farmer is paying more attention to spraying, pruning and other important items. However, it will be a long time before we will get all to spray and give their trees and plants the care they should have.

There has not been as much planting done in this locality the past year as there was the year before in fruits, but there is being planted quite a number of timber plats. These are mostly in lots of from 500 to 2,000 trees, and are planted mostly for posts. There has been at least 200,000 seedlings planted in this one county (Knox) the past season. Catalpa and black locust are the varieties planted. I think this one of the best moves that has been started for some time, and will be of great value to each farm in the course of a few years if they are properly cared for.

Fruit Supply.—There is not one farm in every ten that has enough tree or small fruits to supply his own family—in fact, there are a great many that have no small fruits whatever, claiming they can buy them cheaper than they can grow them, and they do without most of the time.

There are several commercial orchards in this section that have paid very well the past season. Among these are Hon. W. B. Robinson, who had one of the best crops he has ever raised on his twenty-five-acre apple orchard, this being his third consecutive crop. This orchard is thoroughly sprayed and pruned every year, and the clover mowed for mulch several times during the summer, being sandy soil with clay subsoil. There is also a twenty-five-acre pear orchard located partly within the city limits of Vincennes. This orchard has had five consecutive crops the past season. There were over 6,000 bushels of Keiffer and Garber pears. This has had only very moderate care and very little pruning, with some spraying. The trees have been very healthy from the start and commenced bearing very young. The third summer from setting 600 bushels of fruit were gathered. There are quite a number of commercial apple orchards around Bicknell, in the upper part of the county, which have paid very well, but as a rule they have had very little care, although this is one of the best apple sections of the State, especially for Winesaps and apples of that family.

Land in this section of the county can be bought for $35 to $40 per acre that is adapted to apples.

There is very little forward movement as to beautifying school grounds here as yet, but think the time is not far distant, as the country homes and grounds have been improved a great deal during the past few years, and as a nurseryman I can notice a marked advance in the demand for roses, shrubs and ornamentals, all of which shows an awakening along that line. I think the Civic Improvement League is doing a wonderful work in this line, but so far there are no societies of this kind in this section.

I think the interurban railways are going to bring about more improvement than any other one agency, giving the rural population a chance to get out more and see how the people live in the cities, and, seeing the beautiful yards, they go home with a determination to fix up their own premises.

I think one of the best works that can be done by the Horticultural Society would be to give lectures in different parts of the State, these to be illustrated with stereopticon views of some of the best kept orchards, gardens and lawns.

REPORT FROM THIRD HORTICULTURAL DISTRICT.

BY C. N. LINDLEY.

There seems to be quite an advancement in horticulture in the counties of the Ohio Valley in small fruits. Floyd County does a wholesale business, many carloads being shipped each day during the berry season, from about May 15th till June 15th. Many orchards are being planted each year, as this section has proven exceptionally good for fruit of all kinds.

Farmers are not giving as much attention to fruits for home use as we would hope to see, as the impression seems to be that the care of an orchard or fruit garden interferes with the general farm work, and that often the fruit can be purchased cheaper than it can be produced at home.

There are quite a number of commercial orchards in the counties bordering the Ohio River, but I am unable to give names of the owners. Mr. Stevens, of Salem, President of the State Horticultural Society, has the largest pear orchard in the United States, comprising about ninety acres and over 11,000 trees. So far it has never borne a profitable crop, but we hope and expect to see a banner crop at no distant day. Mr. E. M. C. Hobbs, of Salem, has a mixed orchard of eight acres that is promising good returns, as the plums have yielded well and been profitable.

Land in this district suitable for fruit growing can be purchased from $10 to $50 per acre, and at these prices no doubt can be made to yield a handsome profit upon the investment.

A few good practical horticultural topics, to be discussed at the various Farmers' Institutes in this section, will create an interest along the line of both commercial orchards and fruits for the home.

ANNUAL REPORT OF NOBLE COUNTY HORTICULTURAL SOCIETY.

This society has now completed its eighth year and numbers 400 enrolled members. It held meetings during the year 1904 at the home of John D. Black in February; at the home of J. O. and Mrs. M. J. Good in April; at Rome City with the Lagrange County Society in June; at the home of J. C. Kimmell in August; at the home of George D. Gaby in November; at the home of John J. Forker in December. Five hundred persons were in attendance at the June meeting and 300 at the November meeting. We had an average attendance at all meetings of 200 persons. At each meeting some live subject in horticulture, agriculture or economic science was taken up and discussed. Occasionally the services of some speaker of prominence from a distance has been secured. Music, recitations and readings by the young people have filled out our programs.

The society dinners have formed a substantial attraction, enlarged our attendance and added to our membership. The cash premiums offered at its June, August and October meetings have served a good purpose. The show of fruits, vegetables and flowers at these meetings have been exceptionally fine.

A good average crop of fruit was grown here last year. An extra crop of vegetables was grown, onions forming the staple commercial crop.

The society exhibited fruits at the Indiana State Fair, and fruits, vegetables and flowers at the Kendallville Fair. We sent a delegate to the annual meeting of State Horticultural Society and one to the meeting of the State Board of Agriculture.

The financial report shows receipts for the year of $476.00; expenditures, $297.64, leaving a balance on hand of $178.42. Our last annual report, of which 2,000 copies have been printed is a fifty-six-page book with handsome cover—in style and finish a model of the printer's art.

The following officers were elected for the year ensuing: J. C. Kimmell, Ligonier, president; Mrs. D. K. Hitchcock, Brimfield, vice-president; John W. Moorhouse, Albion, secretary; William W. Carey, Albion, treasurer; Executive Committee—George D. Gaby, P. J. Stanley and C. L. W. Harvey.

JNO. W. MOORHOUSE, Secretary.

ANNUAL MEETING OF THE STATE BOARD OF HORTICULTURE.

The State Board of Horticulture met in Room 12, State House, Thursday, December 8, at 5 o'clock p. m., President Stevens in the chair.

The following bills were filed, presented to the Board, and, on motion, were allowed and warrants on the treasury ordered drawn.

99.	W. W. Stevens, for expenses attending annual meeting....	$12 00
100.	H. H. Swaim, for expenses attending annual meeting.....	12 00
101.	Sylvester Johnson, amount paid to exhibitors for premiums at annual meeting, Dec. 7-8, 1904.....	72 85
102.	W. C. Reed, for expenses attending annual meeting.....	9 00
103.	Chas. N. Lindley, for expenses attending annual meeting..	9 85
104.	A. W. Shoemaker, for expenses attending annual meeting..	1 40
105.	H. W. Henry, for expenses attending annual meeting.....	10 60
106.	Snead Thomas, for expenses attending annual meeting....	3 30
107.	C. W. Foote, for expenses attending annual meeting.....	10 50
108.	J. C. Grossman, for expenses attending annual meeting...	12 55
109.	E. Y. Teas, for expenses attending annual meeting.....	4 75
110.	Walter S. Ratliff, for expenses attending annual meeting..	5 00
111.	Prof. Jas. Troop, for expenses as member of the Ex. Com. and Com. on Control of the Exp. Orchard.....	13 85
112.	H. H. Swaim, for services as entry clerk at annual meeting	5 00
113.	Mrs. W. W. Stevens, for expenses incurred as member of Com. on Control of Exp. Orchard.....	1 60
114.	J. M. Zion, for premiums awarded at the State Fair, 1904..	4 00
115.	C. M. Hobbs, for expenses incurred as member of Com. on Control of Exp. Orchard.....	7 05
116.	Miss Ella Shera, for stenographic work at annual meeting, Dec. 7-8, 1904.....	38 00
117.	Sylvester Johnson, for expenses incurred in transferring treasury to L. B. Custer.....	4 00

No further business appearing, the Board adjourned.

W. B. FLICK,
Secretary.

WARDER W. STEVENS,
President.

INDEX.